• SEPTEMBER 1958

BUTANE-PROPANE News

A CHILTON PUBLICATION

HOW TO CUT DELIVERY COSTS

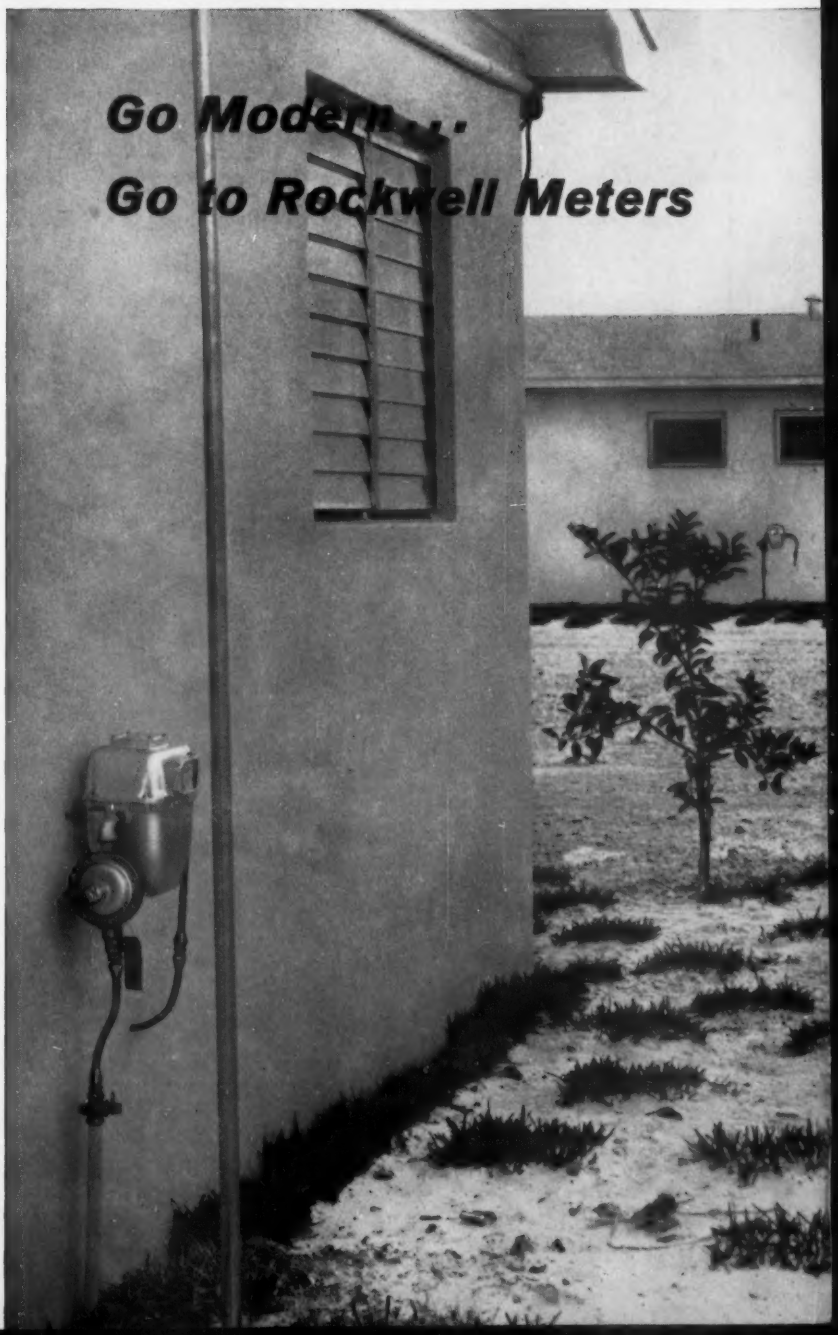
HEADQUARTERS FOR L.P. GAS INFORMATION SINCE 1931

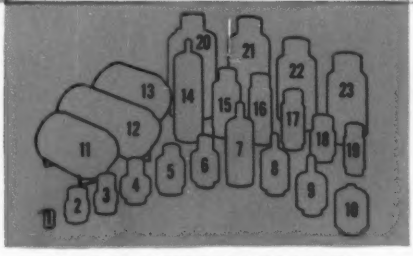
MAKE MORE MONEY

To grow and prosper, the LP-gas industry must sell its fuel as a modern convenience—must upgrade its service. Dealers using Rockwell vapor meters have recognized these facts. They make the convenience and economy of metered service the keystone around which to build a successful business. They make *more money* than dealers selling LP-gas in bulk. Ask us to prove it. Write Rockwell Manufacturing Company, Pittsburgh 8, Pa.

Photo courtesy of Carribean Gas Company

LP-GAS VAPOR METERS
another fine product by
ROCKWELL





KEY TO CYLINDERS IN PHOTO

Key No.	Model No.	Capacity (Lb. Propane)
1—	T.91	.91
2—	PC-5PL	5
3—	PC-5	5
4—	PC-11	11
5—	PC-20APL	20
6—	PC-20A	20
7—	RC-40A	40
8—	RC-25	25
9—	RC-20	20
10—	CC-20A	20
11—	200H-22	200
12—	420H-24	420
13—	420H-29	420
14—	RC-100A-DB	100
15—	PC-60ATR	60
16—	H-43L	43.50
17—	H-33L	33.50
18—	H-20L	20
19—	H-14LV	14
20—	PC-420A	420
21—	PC-300A	300
22—	PC-200A-22	200
23—	PC-150A-20	150

How many of these Hackney LP-Gas Cylinders do you use?

Shown here is a representative selection of Hackney LP-Gas Cylinders chosen from the much larger *complete* Hackney line.

Each cylinder represents a profitable service opportunity for LP-Gas dealers. In fact, many dealers may have as many as 112 different markets for LP-Gas right in their own marketing area!

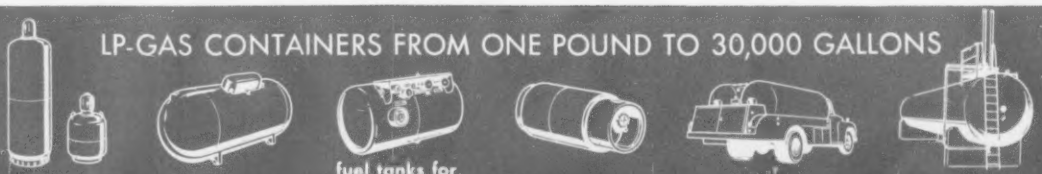
Hackney's *full line* helps get new business

The chances are you can get more business, too, regardless of the type of cylinder required, because Hackney has the cylinders for you—one to 420 pounds. Many are available immediately from stock. All are lightweight, two-piece cylinders, made the Hackney way—deep drawn from cold metal for uniform wall thickness, strength without excess weight.

For a list of uses for LP-Gas in the home, on the farm, in industry and commerce, write at once to:

Pressed Steel Tank Company
Manufacturer of Hackney Products
1487 South 66th Street, Milwaukee 14, Wis.
Branch offices in principal cities

LP-GAS CONTAINERS FROM ONE POUND TO 30,000 GALLONS



cylinders · systems · fuel tanks for trucks and tractors · lift truck tanks · tank trucks · bulk storage tanks

TR 125
wall
thermostat
Robertshaw
Guaranteed by
Good Housekeeping
more to sing a-bout!
You get more to sing about...more to *sell*...
when your central heating appliances
feature controls designed, engineered
and backed by the name she knows best.....
ROBERTSHAW
Manufacturers of gas home heating, water heating, oven, range and top burner controls.
INQUIRE TODAY... CONTACT
Robertshaw-Fulton
CONTROLS COMPANY
GRAYSON CONTROLS DIVISION · LONG BEACH, CALIFORNIA
advertised in GOOD HOUSEKEEPING SUNSET
AMERICAN HOME SATURDAY EVENING POST

It's Later Than You Think...

Or Is It?

Late, yes . . . but not too late if you have planned ahead and have your tanks and your customers' tanks filled. That first falling leaf is a reminder that time is growing short. To be sure you can supply your customers' demands . . . double check NOW.

CONTACT OUR NEAREST SALES OFFICE

MEMBER NATIONAL LP GAS COUNCIL
LIQUEFIED PETROLEUM GAS
BUTANE · PROPANE · BOTTLED GAS · BULK GAS
AVAILABLE EVERYWHERE
DEPENDABLE ALWAYS

WARRENGAS *the Concentrated fuel*

GULF GULFTANE LP-GAS BUTANE PROPANE

WARREN PETROLEUM CORPORATION

TULSA, OKLAHOMA

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Volume 20-Number 9

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FOUR NEW Nor-Tex BIGGER

Nor-Tex STANDARD TWIN — **You'll Haul Extra Gallons Each Trip!**

Nor-Tex PAYLOAD SPECIAL — **You'll Deliver Extra Gallons Each Trip!**

2500 WG Units Now Weigh

TRANSPORTS

You can now haul MORE GAS and LESS STEEL than ever before with skillfully engineered, smart looking, streamlined Nor-Tex transports of T-1 and A-202 steel. These easy-to-maneuver, road-tested units are hauling more gas and substantially boosting profits for users everywhere. Nor-Tex transports are *safe* and *dependable* . . . built by men with *years of bulk plant experience.*

LOOK TO Nor-Tex For ALL Your LPG NEEDS

WRITE, WIRE OR PHONE FOR PRICES

Nor-Tex PRODUCTS COMPANY

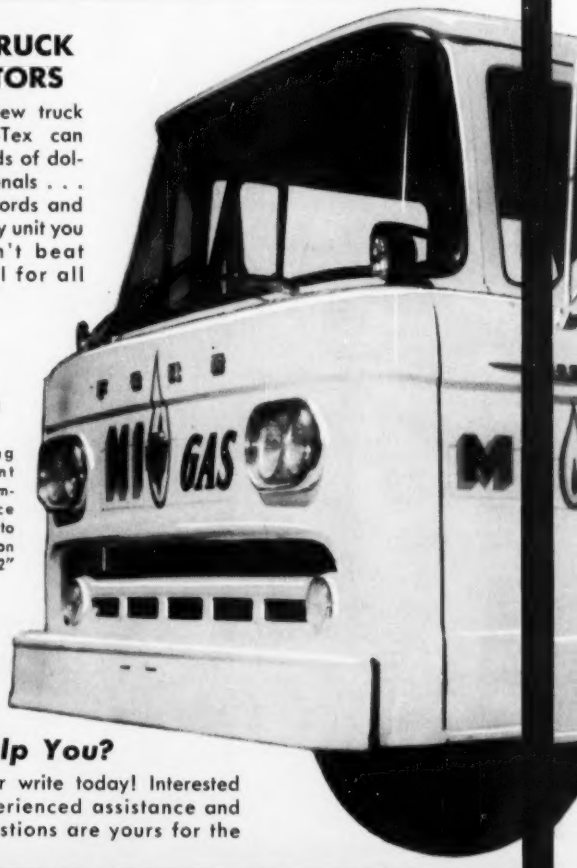
National Sales Agents for

WE ARE TRUCK DISTRIBUTORS

As authorized new truck distributors Nor-Tex can save you hundreds of dollars on Internationals . . . Chevrolets . . . Fords and GMC's. Order any unit you need. You can't beat a Nor-Tex deal for all around value.

ROCKET
Boosting Sales Everywhere

Everyone is talking about the excellent Nor-Tex attention-compelling LPG Service Station . . . flexible to any type of installation . . . occupies only 72" diameter.



May We Help You?

Phone, wire or write today! Interested attention, experienced assistance and helpful suggestions are yours for the asking.

NORTH TEXAS

PAYLOAD DELIVERY UNITS

Nor-Tex CUSTOM TWIN — **You'll Work Fewer Hours... Drive Less Miles!**

Nor-Tex DE LUXE TWIN — **You'll Earn More Money The Nor-Tex Way!**

Under 23,000 lbs. Loaded!

Nor-Tex presents the newest development in sleek, LIGHT-WEIGHT, stream-lined twin or single barrel LPG Delivery Units and again Nor-Tex is FIRST with ALUMINUM SKIRTING and CABINETS and engineering designs which have reduced over-all weight. 3000 WG units and over are also available for use on cab over or cab forward trucks and are still within the 18,000-lb. axle limit.

Nor-Tex Custom units haul "extra" gallons each trip! You deliver "extra" gallons faster with Nor-Tex custom designed high flow plumbing. You take fewer hours and travel less miles to deliver a gallon of gas. For day in, day out efficiency, durability, payload, fast loading, high rated delivery, perfect balance and appearance Nor-Tex delivery equipment can't be beat!

Ideal In States Imposing Ton Mile Tax

Nor-Tex LOW COST LPG Financing

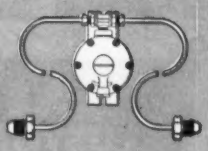
A PLAN TO MEET EVERY NEED

TANK CO.

P. O. BOX 1219
DENTON, TEXAS
DUpont 2-5416

Serves more people than any other regulator

"LITTLE JOE"
(Type 912)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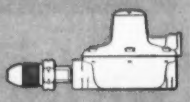
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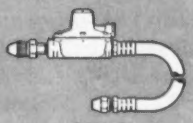
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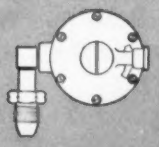
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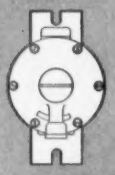
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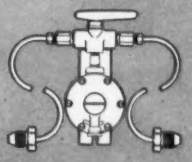
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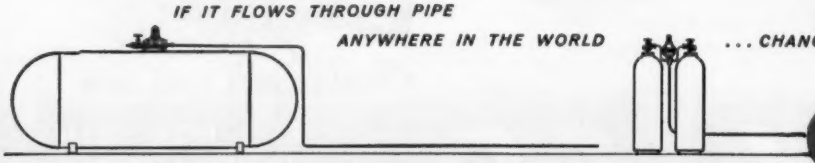
- Rugged construction in every detail for long, trouble-free life.
- Maximum effective area of strong sensitive diaphragm.
- Accurate, powerful, friction-free lever mechanism.
- Large, newly improved bug-proof vent.
- Sturdy, clean pipe connections ¼" inlet, ⅜" outlet.
- Large orifice minimizes freeze-ups.

IF IT FLOWS THROUGH PIPE ANYWHERE IN THE WORLD ... CHANCES ARE IT'S CONTROLLED BY



FISHER® Controls
SINCE 1880

FISHER GOVERNOR COMPANY
Marshalltown, Iowa Woodstock, Ontario

Letters

Relief valve flow difficult to check

Sweden

The reason for my writing to you is just a "letter"-answer in the October 1957 copy of the BUTANE-PROPANE *News* to a question concerning relief valve capacities, where the capacity is given as the free discharge area of the relief valve in square inches. This has somewhat astonished me, since long ago the "Pamphlet 58" is giving the discharge capacity of safety valves in cubic feet of air discharged per minute by a safety valve at 120 per cent of the maximum permitted start to discharge pressure for the safety valve in question.

This question interests me particularly since I am chairman of a pressure vessel committee charged with formulating regulations for liquefied petroleum gas containers.

I should be very much obliged if you could get me a formula for calculating the gas (or air) flow through a discharge opening of the magnitude which is actual for safety valves so that I could check the accordance between our formula for calculating the discharge quantity in cubic feet/min. and your Californian formula for calculating the discharge area.

The formulas and tables given in the *Butane-Propane Handbook* do not seem to apply in my case; they seem applicable only for very low pressures and small orifices.

C. F. W.

The early issues of Pamphlet 58 specified the relief valve size for storage tanks in square inches of free discharge area. It was between 1940 and 1945 that the change was made to the rate of discharge.

If you have a 1947 printing of the 3rd edition of the *Handbook of Butane-Propane Gases*, Part 7, Section 2, entitled "Motor Carrier Tariff No. 7," still carries a table on page 302 which lists minimum free discharge areas for various tank sizes. See the editors' note at the bottom of the table which makes reference to the "new" method of determining safety valve sizes. California is just now changing its code, although it accepts NBFV ratings. The rate of flow ratings give a little better protection.

I have tried to obtain the formula used for determining flow rates of relief valves from a couple of the companies which manufacture such valves. They are reluctant to reveal their formulae. There are several reasons.

1. You are quite aware that the flow through a relief valve is not a simple route. Any fluid must make several changes in direction of flow plus encountering various other obstacles through the passage.
2. All the formulae are to some extent what we term empirical. That is, the formulae are based on the results of tests and experiments.
3. Small changes in design often make noticeable changes in capacity.
4. One series of valves may not follow the formula developed from another series.
5. Size of the relief valve extension has an important bearing on the valve's capacity.
6. It was found by the first valves listed for actual flow capacity that there was a wide range of flow rates between the valves produced by the various manufacturers, and also, between designs by the same manufacturer.
7. Even now there is a marked difference in the capacity of relief valves from different manufacturers even though the valves have the same pipe size connection and about the same free discharge area.

I think that you will understand from the above that it will be difficult to check the flow through a relief valve by a formula. Once a design is established, an empirical formula, or a formula modified with constants will aid the designer in estimating the capacity of a relief valve of like design but different size. However, I think the formula will have to be modified further if any other design is considered.

The manufacturers in your country will have to test their valves and establish capacities under all conditions of service. It can be done with air or CO_2. CO_2 having the same specific gravity and other characteristics as propane is an excellent test gas. However, air is satisfactory because a correction can be made for the effect of specific gravity on the flow rate.

A formula used in estimating the flow through steam for air relief valves should be satisfactory if modified for LP-Gas. The formulas in the *Butane-Propane Handbook* which you refer to are for low pressure gas. They are also for orifices of the special design used in gas burners where the gas passes through the orifice without obstruction.

I think your committee will want to establish the amount of gas which the relief valves on various sizes of tanks must release under certain conditions. It will be the responsibility of the manufacturer to prove the capacity of his valve. The manufacturers in this country must prove the capacities of their valves. They do this by having the Underwriters's Laboratories or other nationally recognized test laboratories test and list their valves. I think you can depend on their published data.—Ed.

Temperature correction with slide rule?

Iowa

Please advise us who manufactures a slide rule to use for temperature correction with 100 per cent propane.

Also advise who manufactures a temperature correction device which can be used in conjunction with a No. 433 Neptune Print-O-Meter.

W. L. H.

We do not have any information at the present time regarding the name of the manufacturer of a slide rule to use for temperature correction with 100 per cent propane. We do know that one has been devised and we are writing to find out where they may be obtained. As soon as we know we will advise you.

There is a thermometer on the market which can be inserted in the temperature well of a Neptune LPG meter. This thermometer is graduated in per cent correction for various temperatures plus or minus 60 degrees. We know that this can be obtained through the Meeder Equipment Co., 1745 Northeastern Ave., Los Angeles, or the L. H. Krug Co., Madison, S. D. There may be many other LPG equipment suppliers who have this.

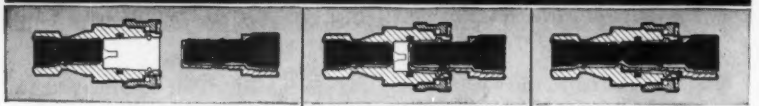
We do not have any definite information regarding a temperature correction device that can be used in conjunction with a No. 433 Neptune Print-O-Meter. We suggest that you write to the Neptune Meter Co., 15 West 50th St., New York, and see if they have anything to offer. If they do not have anything, then there is no other device that we know of which will automatically compensate for fuel volume variation due to temperature.—Ed.

Eliminates Hazard of Leakage or Spillage

APPROVED BY UNDERWRITERS' LABORATORIES

3-GRL1621 QUICK-CONNECTIVE COUPLING

For L. P. Gas Line Connections



DISCONNECTED
Closed valves in Socket and Plug provide positive shut-off on both sides of line.

PARTIALLY ENGAGED
Coupling sealed by O'Ring — while valves remain closed. No possibility of premature flow or leakage.

FULLY ENGAGED
With Socket and Plug fully engaged to insure positive, foolproof connection, valves open to permit free flow of gas.

Specifically designed for L.P. gas line connections, Hansen GRL Couplings completely eliminate the hazard and annoyance of leakage or spillage of gas.

To connect (no tools required), you merely push the Plug into the Socket — all the way. To disconnect, just turn sleeve — Coupling instantly and automatically shuts off both ends of line.

Sockets available with ¼" female pipe threads. Plugs available with ⅜" female pipe threads.

Write for descriptive literature

SINCE 1915 QUICK-CONNECTIVE FLUID LINE COUPLINGS

THE HANSEN MANUFACTURING COMPANY

4031 WEST 150th STREET • CLEVELAND 35, OHIO

Advantages of LPG over diesel fuel

Colorado

We have an inquiry from the local REA concerning the comparable cost per kilowatt using LPG versus diesel.

This unit will be in Colorado and will be on continuous duty for some time, at least till the new power plant that is proposed becomes a factor.

Would appreciate any information that you have concerning this problem using 8 cent LPG, either butane or propane or mixes, versus diesel (no. 2) at 15 cents. Since they want to purchase new units equipped, I cannot give you the horsepower of the engines but believe that you will be able to give us the information needed. I would say the altitude is right at 7000 ft.

C. H.

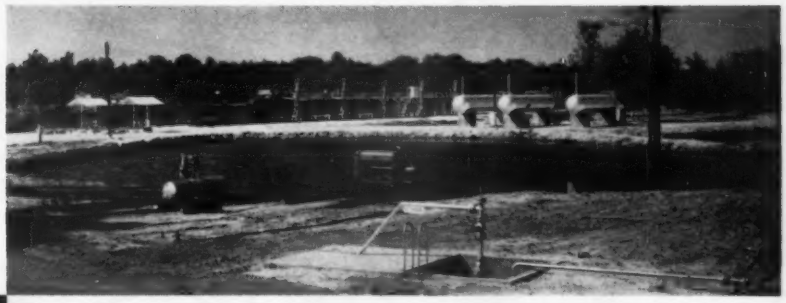
A diesel engine of conventional design and in good operating condition, may be expected to deliver one bhp at the drive shaft on .42 lb of diesel oil.

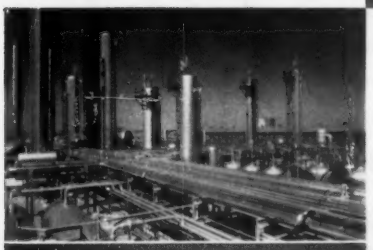
Performance curves indicate that a gasoline engine of comparable size will use about .52 lb of gasoline per bhp. We have no exact figures for L. P. gas, but with higher compression ratio and clean operation, better results should be expected. The .52 lb of gasoline is about 10,500 Btu (varies with gasoline quality). On L. P. gas the heat requirement should not exceed 10,000 Btu per bhp.

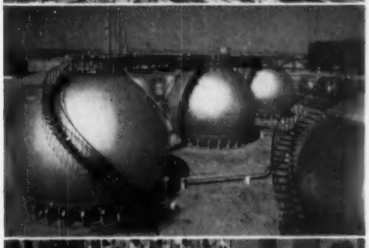
A pound of diesel oil contains about 19,000 Btu—19,000 x .42 = 8000 Btu/bhp. A gallon of diesel oil contains about 138,000 Btu. So, at 15 cents per gal. the cost of fuel per bhp equals .15 x 8000/138,000 equals .0087.

A gallon of propane-butane mix contains about 97,000 Btu per gal. (varies with percents of butane and propane). So, L. P gas at 8 cents per gal. costs .08 x 10,000/97,000 = .00825.

A. for service to L.P.G. men







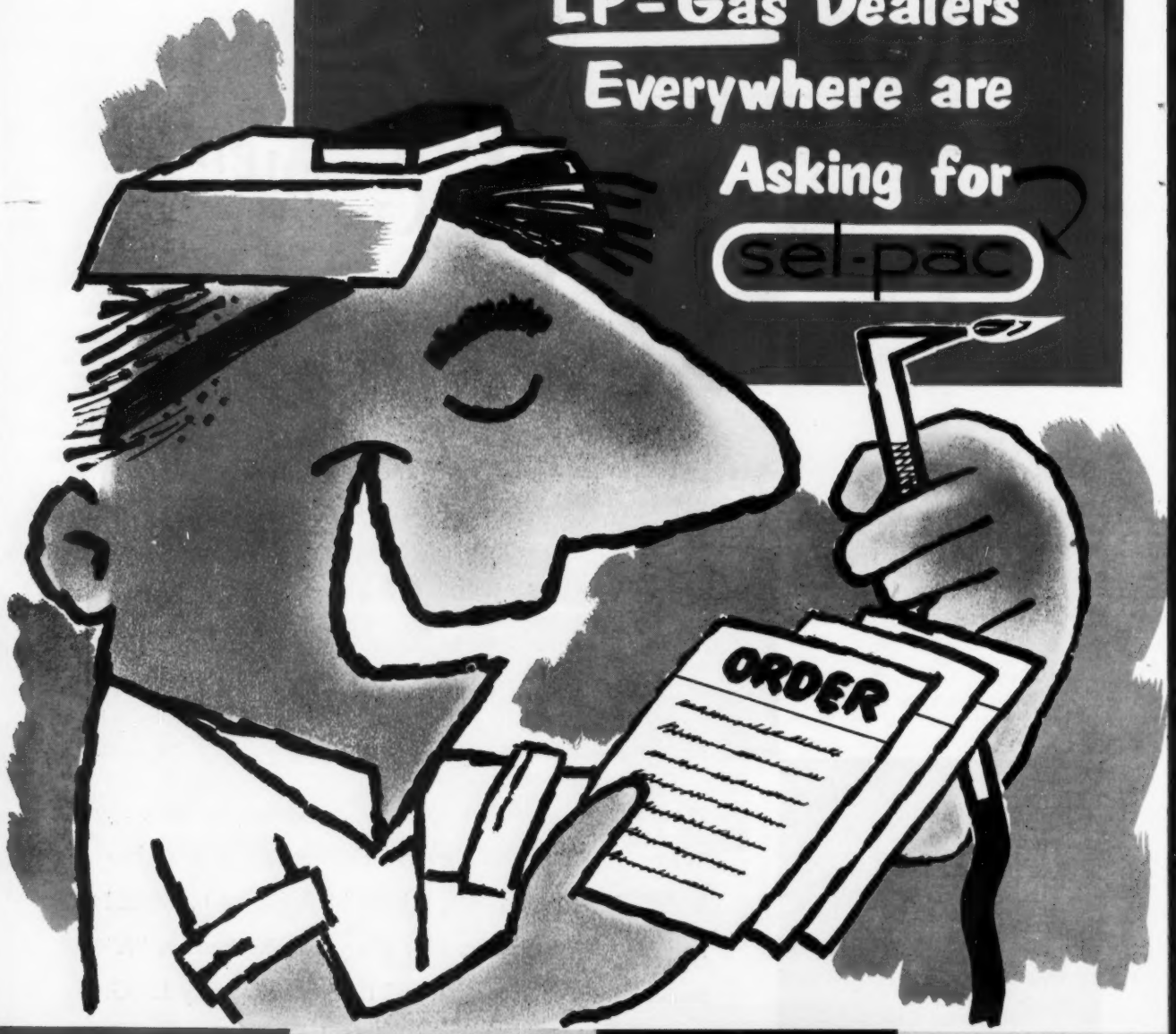
And Anchor wants to earn an "A" from you too . . . Wants your order so they can demonstrate how nation-wide facilities, experience, skill and helpfulness have rated an "A" from customers over the years. Remember, "A" stands for Anchor, service, and the highest quality L.P.G. now available. So, whatever you need, whenever you need, and wherever you need L.P.G., call Anchor in Tulsa, CHerry 2-7261.

ANCHOR

PETROLEUM COMPANY • TULSA

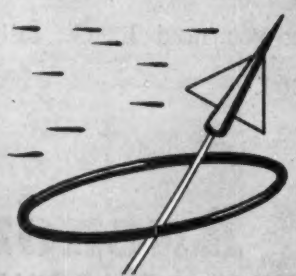
SALES OFFICES: Toledo, Sioux City, St. Paul, Shreveport, Hattiesburg, Gulfport, Savannah, Oklahoma City, Houston, Midland, Long Beach, San Francisco, Seattle, Calgary

"I'm a Tank Fabricator... LP-Gas Dealers Everywhere are Asking for sel-pac

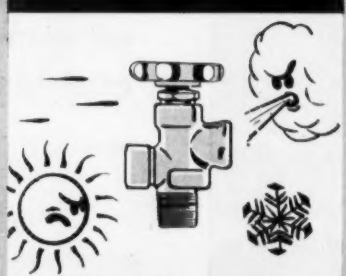


Here's why dealers ask for

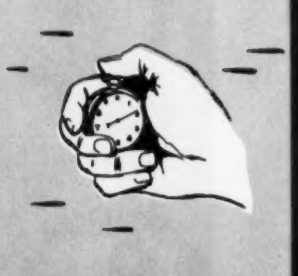
SEL-PAC



Riding with the fastest jet—are pressure seals like those in your Sel-Pac O-Ring Island Bar—so safe, so sure, they offer a new standard in tank fitting practice.



From arctic freeze to desert sizzle—hundreds of thousands of applications will testify to the quality of Sel-Pac's "All Weather" valve construction. Why not join the trend and see for yourself?



Where split seconds count, where speed and high capacity are most important—there you will find Sel-Pac's advanced engineering paying off for you—saving time, trouble and money.

The phenomenal acceptance of Sel-Pac fittings, we like to believe, is a reflection not only of excellent product performance in the field, but also of extreme care given to every purchase order received for Sel-Pac products.

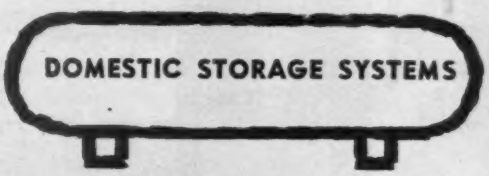
Fabricators of LP-Gas cylinders, domestic systems and mobile fuel containers are happy to comply, when possible, with your request for Sel-Pac fittings.

If you have not already joined the trend toward standardization of Sel-Pac fittings on all of the cylinders and tanks you buy, why not start today? Send for our complete catalog containing much technical information for use by your engineers and salesmen. You will find that Sel-Pac fittings not only result in greater field dependability but compliment the fine construction of today's LP-Gas containers.

Selwyn-Pacific Company 14502 So. Figueroa,
P.O. Box 61031 • Los Angeles 61, California

COMPLETE FITTING GROUPS *for* CYLINDERS

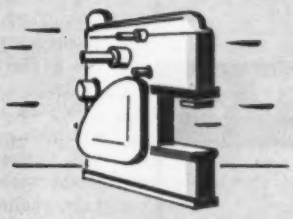
COMPLETE FITTING GROUPS *for*



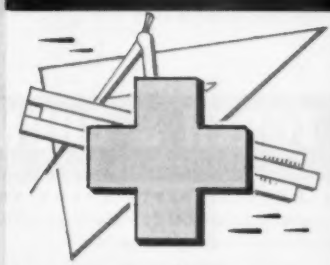
COMPLETE FITTING GROUPS *for* MOBILE TANKS . . .

sel-pac
MARK OF LEADERSHIP

Versatility? Yes!—That's Sel-Pac's middle name — regardless of what valving arrangement you like best (from the individually or O-Ring Island Bar fitted tanks to the popular Uni-Pac shown above)—Sel-Pac has the answer for you.



Fantastic advances in manufacturing techniques place Sel-Pac valves "Ahead of the Future". An example . . . new forging techniques for stronger, safer, higher capacity valves, where threads are actually forged for extra strength and safety.

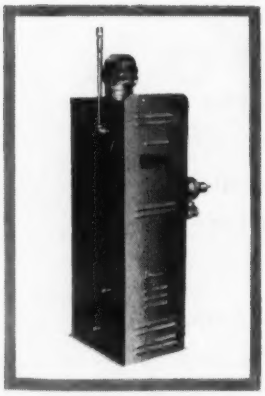


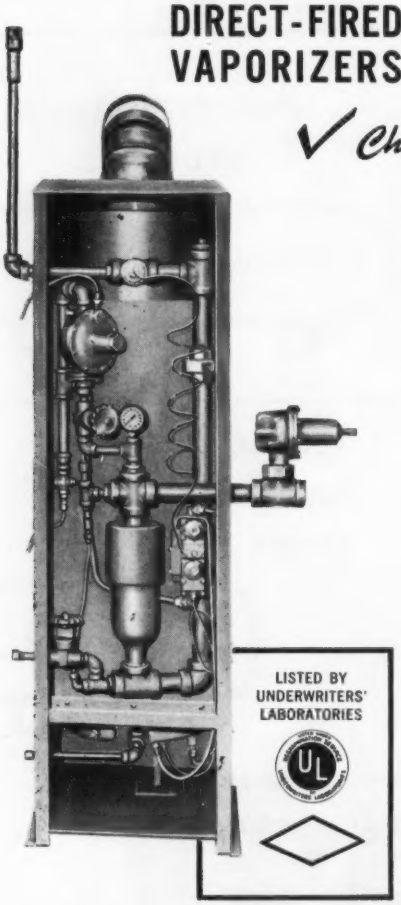
Sel-Pac safety engineering teams keep the press for speed in line with safety—that's why the Sel-Pac valves in your L.P. container promise the ultimate in speed consistent with safety and keep their promise.

Around the world—Sel-Pac's service before and after sale, assures you the finest in product performance. Sel-Pac's engineering and research and development departments are always at your call.

THE LATEST DEVELOPMENT
FOR YEAR 'ROUND LP GAS SERVICE . . .

NEW RANSOME
AUTOMATIC DIRECT-FIRED VAPORIZERS





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✓ *Check* THESE OUTSTANDING FEATURES!

- ✓ RETURN VAPOR LINE NOT REQUIRED — Saves on installation costs and prevents robbing vapor from fuel tank.
- ✓ EXTERNAL FLOAT CONTROL—is located outside of vaporizer chamber for easy accessibility.
- ✓ THERMOSTATIC ELEMENT TOTALLY ENCLOSED WITHIN HIGH PRESSURE THERMOWELL—eliminates hazards from gas leaks by preventing direct contact of element with liquid or vapor fuel.
- ✓ MODULATING TYPE CONTROLLER — when temperature reaches set control point, gas pressure is reduced from normal 11" W.C. to 5" W.C. . . . greatly reducing heat input and preventing vapors from reaching excessive temperatures.
- ✓ RANSOME COUNTERFLOW PRINCIPLE—fuel enters at top and flows downward to meet products of combustion flowing upward. This unique design provides the utmost in heat transfer efficiency, reducing operation costs appreciably.
- ✓ 100% SAFETY CONTROL, includes:
  1. High temperature cut-off valve that stops flow in case of external fire.
  2. 100% secondary air type burner eliminates flash back.
  3. Safety valve shuts off all gas to pilot and burner when pilot becomes extinguished.

RANSOME AUTOMATIC Direct-Fired Vaporizers are available in three sizes to cover the full range of requirements. They'll more than pay for themselves in long-life and trouble-free operation.

OPERATING CAPACITIES

Model	Rated Gals. per hour	Working Pressure
RV80	80	250
RV100	100	250
RV120	120	250

RANSOME TORCH & BURNER CO.
4030 HOLLIS STREET • EMERYVILLE 8, CALIFORNIA

WRITE YOUR NEAREST DISTRIBUTOR TODAY!

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MEXICO CITY 5, D.F.—C. R. HOJEL & CO., S.A.—Tiber No. 94

The L. P. gas has an advantage in price and has an added advantage in reduced oil consumption and maintenance costs.—Ed.

Heat losses are heavy in greenhouse heating

Indiana

We have a customer interested in converting a Kawanee 1922 boiler to L.P. gas. He would use this for a hot water system in his greenhouse.

I do not know the horsepower of the boiler but it is plenty good size, and had been fired by coal.

Please send us any information as to who to contact on such a conversion, and if you have any dope on greenhouse heating, please rush, also any cost figures.

Size of greenhouse is 5 blocks high, then 3 ft to a 9 ft gable; 79 ft long by 49 ft wide. This is one of our better customers and we'd get a real push if we could jell on such a deal.

T. C. S.

Since you have not given us the size of the boiler, we cannot give you any information on its capacity to heat the greenhouse.

We suggest that you write to the Kawanee Boiler Corp. Division of the American Radiator & Standard Sanitary Corp., Kawanee, Ill., and ask them about its capacity. You should send them the model number and serial number of the boiler as well as the year built and any other information you may find on the name plate. If the name plate has been destroyed (you may have to search to find it if it is there) send them some accurate dimensions such as the outside dimension of the boiler, dimensions of the grate, steam connection size and other pertinent data about it.

They can supply or recommend a gas burner for converting it to L. P. gas. They can also advise if it will be necessary to make any changes in the baffles or brickwork around the grate.

We do not have any cost figures available on heating greenhouses. The cost varies, of course, with the size, temperature maintained, state of repair, shelter from the wind and out side temperature.

If the glass is single pane, the heat transfer rate is 1.13 Btu/hr/degree F difference in temperature between inside and outside per square foot of

SELL NORCO GAS REFRIGERATORS...

with the exclusive features

Model 5865G

Approx. 6.7 cu. ft., free standing, across top freezer with 3 ice cube trays; 2 butter keepers, egg rack, jar rack, bottle stand, full width crisper with glass cover, 4 shelves.

EFFICIENT New NORCOLD Refrigerating Unit designed to function efficiently in extreme climates; makes ice even in tropical temperatures. Opens up brand new market potential.

COMPACT New larger storage capacity in relation to cabinet size is a strong NORCO sales feature wherever space is at a premium.

DIMENSIONS	NORCO 5865G	NORCO 584G
Height	44¼ inches	33½ inches
Width	24 inches	21¾ inches
Depth	26½ inches	23 inches

ATTRACTIVE Smart new styling with choice of WHITE or HAMMERED BRONZE exterior finish to harmonize with any kitchen decor. Pastel green and pink interior with gold and black trim.

AVAILABLE 584G and 5865G available now; order *any quantity, any assortment.* Please specify if LP-Gas models are desired.

Square slimline 9 and 12 cu. ft. models available soon.

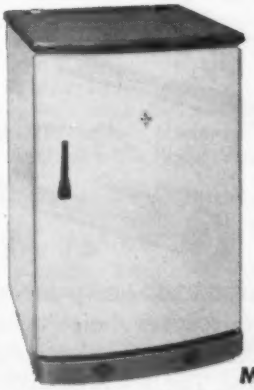
Any gas appliance dealer can sell NORCO

Yes, any gas appliance dealer can sell NORCO GAS REFRIGERATORS regardless of what other type or brand of appliances he chooses to sell. NORCO is exclusive only in its features:

COMPACTNESS—Smallest cabinet size in relation to cold storage capacity.

STYLING—Only gas refrigerator to offer a choice of exterior finishes.

EFFICIENCY—The revolutionary NORCOLD REFRIGERATING UNIT delivers top cooling performance when it is most needed—*in hot weather.* By providing dependable *all-weather refrigeration,* NORCO removes the one big restriction that has hampered gas boxes in the past. All of these exclusive NORCO features will help you sell the larger models which will be available in quantity very soon. Test the presently available models against anything else on the market and prove for yourself that the future of gas refrigeration lies with NORCO.



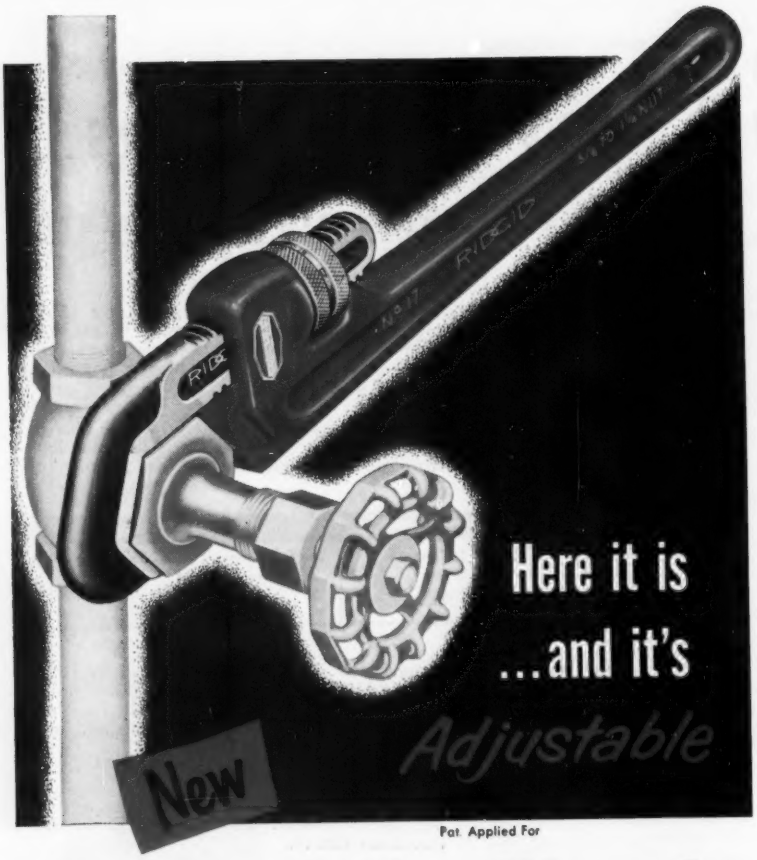
Model 584G

Approx. 4 cu. ft. square cabinet, contoured door, formica table top, vertical evaporator, 2 ice cube trays, 2 butter keepers, egg rack, bottle stand, full width crisper with glass cover, 3 shelves.

Get set today for tomorrow's refrigerator business

Order your new NORCO GAS REFRIGERATORS now!

NORCO, INCORPORATED • Dept. 16, 5111 West Washington Blvd., Los Angeles 16, California

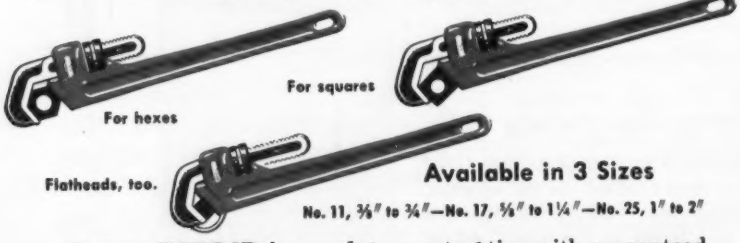


Pat. Applied For

RIDGID Hex Wrench

gives you Time-Saving, Positive, 4-Sided Grip on Hex Nuts, Square Nuts, Valve Packing Nuts, Unions, Gas Cocks

Here's the adjustable wrench you've always needed for hexes, squares and flatheads, rough or finished. Extra useful on every job. No more barked knuckles or rounded nut shoulders. New wide-open jaw goes on easy . . . won't slip off. 4-sided grip gives extra leverage. Stays to adjusted size during use.



Available in 3 Sizes

No. 11, 3/8" to 3/4"—No. 17, 1/2" to 1 1/4"—No. 25, 1" to 2"

Famous RIDGID heavy-duty construction with guaranteed housing. Narrow jaw design makes work easy in tight places even on thin nuts. Comfort-grip I-beam handle has handy hang-up hole. The new RIDGID Hex Wrench gives you more for your money than wrenches costing twice as much. Try it, buy it at your Wholesaler's.

The Ridge Tool Company • Elyria, Ohio, U.S.A.

surface for vertical glass panes. If the glass is horizontal as on the roof then the coefficient is 1.40 Btu/hr /F/sq ft.

If there are two panes of glass per section with an air space of ¼ in. between the two sheets of glass then the coefficients are about half or .60 Btu/hr/F/sq ft for vertical glass and .70 for horizontal ones.

The area of glass in the roof section (horizontal sheets) will be about $2 \times 26.25 \times 99 = 4175$ sq ft. The area of glass in the vertical section is about 1210 sq ft. The area of block wall is about 850 sq ft. The coefficient of heat transfer for the cement blocks is low and depends on the materials in the blocks. A coefficient of about .1 should be safe and not throw our calculations off very much.

Then if the green house is to be maintained at 50°F and the outside temperature goes down to 0°F, the temperature difference is 50°F. Assume that there is only one thickness of glass. Then the heat transfer through the glass and walls will be as follows:

Block = 850 sq ft × .1 × 50°F = 450 Btu/hr.

Glass walls, vertical = 1210 sq ft × 1.13 × 50°F = 68,000 Btu/hr.

Glass walls, horizontal = 4175 sq ft × 1.40 × 50°F = 292,000 Btu/hr.

Total convection and radiation loss = 360,450 Btu/hr.

This is not all the heat loss that will be encountered. Infiltration of cold air and loss of warm air through cracks, door frames and other openings will vary, depending on the lightness of the glass, in the frames, wind velocity, etc. It is advisable to estimate at least 30 per cent more to overcome losses due to infiltration. This will make the output load of the boiler in excess of 360,450 plus 108,000 = 468,450 Btu if the above temperature conditions are to be met.

The boiler input rating will then need to be 600,000 Btu/hr, or a little more. The above conditions are assumed but indicate the method of calculating the load. We suggest that you visit some other greenhouses in your locality and see what size heating equipment they have.—Ed.

SAFETY NOTE—Drive carefully. Don't be too quick to insist on having your rites.

The main trouble with the younger generation is that some of us no longer belong to it!

A Communist is a fellow who has given up all hope of becoming a Capitalist.

If you wish to appear agreeable in society, you must consent to be taught many things which you know already.

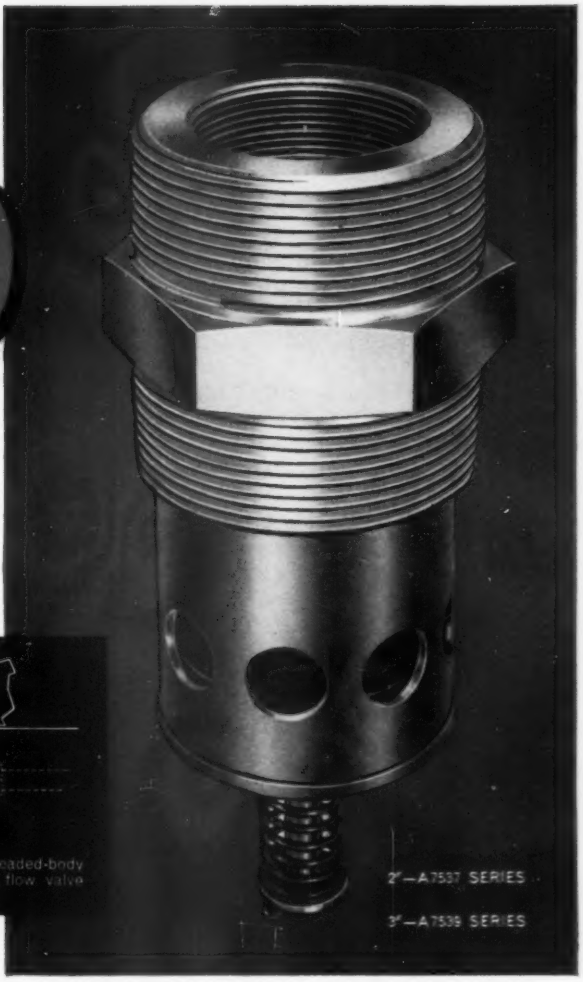
just one of these

REGO

EXCESS FLOW CHECK VALVES

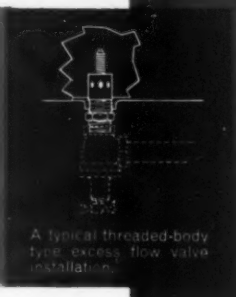
ahead of your pump could save you as much as

$1,000.00 per year!



A7537 or A7539 Series for use with half coupling.

A7537F or A7539F Series with long skirt for use with full coupling.


A typical threaded-body type excess flow valve installation.

What about *your* storage tanks and delivery trucks? If you're not already using these *low-pressure-drop* RegO Check Valves, you are wasting time and big money due to starved pumps with low output and short service life.

For example, the RegO A7537L has a pressure drop of only 1 psi., yet closes at a flow of 72 gallons per minute. It has scarcely more than *one-fifth* the resistance of many older threaded-type excess flow valves, yet closes at the proper capacity for a 50 gpm. pump. This means faster fuel delivery, less cost per gallon pumped, better protection against accidental liquid or vapor losses.

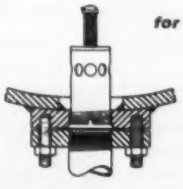
With the RegO 3500 and A3500 Series, users have a complete choice of low-pressure-drop excess flow valves for flanged tank installations—all easily installed and readily accessible. Valves incorporate no-bind stem and self-centering check disc for proper closure.

Pump makers say excess flow valves are the most important single item affecting pump operation; recommend immediate replacement of old flow-hindering units. One pump manufacturer has demonstrated savings up to $1,000.00 per year, *per delivery truck*, where low-pressure-drop excess flow valves are installed. Find out what a difference the right valve makes in better performance with safety. The *right valve* for you is RegO!

for money-saving reliability, it always pays to buy RegO

3500 SERIES (Brass) for LP-Gas (2" or 3" NPT Male Inlet)

A3500 SERIES (Steel) for Anhydrous Ammonia or LP-Gas (2" or 3" NPT Male Inlet)


A typical flange-type excess flow valve installation.

FULL FACTS FREE

RegO makes many other check valves in addition to those shown here, and all are available with variations which adapt them to specific service requirements. Free catalog gives complete information. Write for your copy today.

The BASTIAN-BLESSING Company

4201 W. Peterson Avenue, Chicago 46, Illinois

By NEIL REGEIMBAL
Washington Editor

BPN Washington Report

From BUTANE-PROPANE News Washington Bureau

New housing boom seen

A new housing boom, with construction near the 1.3 million units a year mark that was reached a few years ago, may be in the making, some builders say.

Basis for the belief is vastly easier credit, brought about by government actions easing loan restrictions and reducing interest rates, and the decline in demand for loans brought about by the recession.

The builders are apparently getting ready for a boom. Applications for FHA home mortgage insurance set another all-time record in June, hitting 90,600, compared with 90,000 in the previous month. This was the second straight month in which applications set an all-time high.

These builders were backed up in their optimism by a summer spurt in new housing starts. New housing starts in June hit 115,000. This was 15 per cent above a year earlier and the highest total for any month since August 1955.

Housing officials expected the rise to continue through the summer and fall months if weather conditions remained favorable and building prices did not rise sharply.

Back of the optimistic stand of the builders is the belief that demand for new homes will strengthen next fall and winter when employment increases and the recession fades.

SBA now permanent, lowers interest

Government lending to smaller firms is now a permanent Washington policy. Under terms of legislation signed into law recently by President Eisenhower, the Small Business Administration—the government's multi-million-dollar lending agency—is now in business to stay.

The new law also lowers maximum interest rates on loans made by SBA from the previous 6 per cent to 5½ per cent. In addition, Congress increased from $250,000 to $350,000 the maximum amount the government can loan to any one borrower, and raised the total SBA lending Fund to $650 million.

REA expansion continues

Government-financed REA co-ops are continuing to expand in both numbers of customers and in sales of power to those customers.

New figures compiled by the Rural Electrification Administration show that while the 5 millionth rural consumer was being added to the REA co-op network early this year, sales had already hit almost 20 billion kilowatt hours and revenues $½ billion a year. This compares to sales of 11.8 billion kwh and revenues of $363 million five years ago.

The network of REA-financed co-ops has increased in the last five years from $161 million to $436 million.

Meanwhile, the REA officials are boasting that total payments to the government on principal ahead of schedule by electric borrowers of $800 million exceeds the total amount of loans made during the first 12 years of the REA power program. But they also admit that electrification loans from Jan. 1, 1953, through last April 30, totaled over $1 billion, with the annual dollar amounts of loans climbing steadily during the past five years from $145 million to almost $300 million last year.

New legislation to control REA

Rep. Edgar W. Hiestand (R.), Calif., "in the interest of equal treatment," this year sponsored legislation to knock out one of the many advantages enjoyed by rural electric cooperatives.

Rep. Hiestand, noting that early in the year the Internal Revenue Service prohibited tax deductions by private power companies for alleged "propaganda" public service advertising, introduced a bill to even things up.

The measure, H.R. 12910, would amend the tax laws so that any rural electric co-op "which engages in propaganda" advertising, will lose its tax exempt status. It would state that the tax exemption for rural co-ops:

"Shall not apply to any cooperative engaged in rural electrification, for any taxable year in which it engages in propaganda or otherwise attempts to influence legislation, or in which it participates in or intervenes in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. . . ."

The measure was referred to the House Ways and Means Committee. If not acted upon this year, it would have to be re-introduced next year to be considered again.

Fair trade law studies continue

Congressional studies of the need for a new federal fair trade law will continue this summer and fall—after the lawmakers have adjourned for the year.

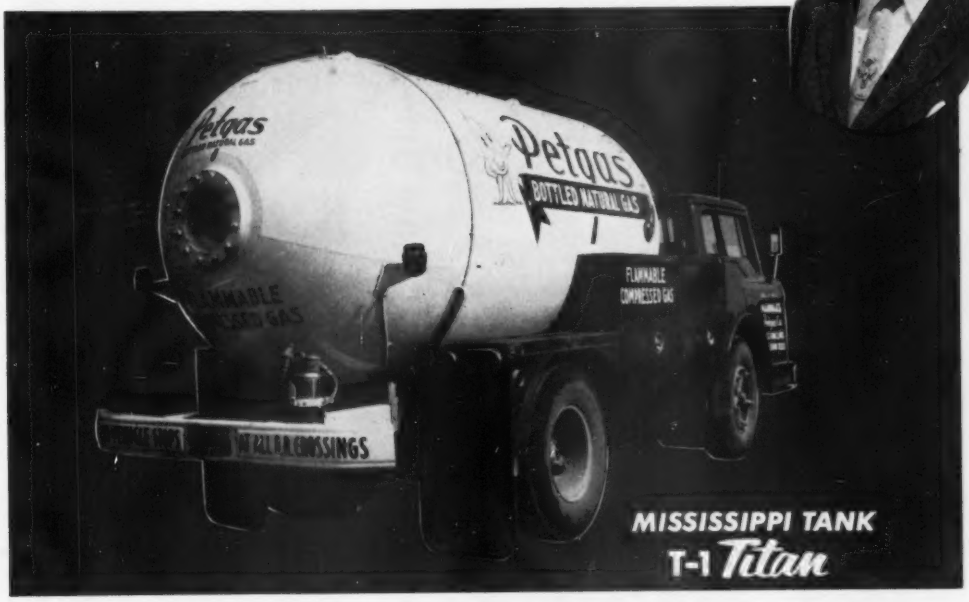
A subcommittee of the Senate Commerce Committee headed by Sen. Alan Bible, D., Nev., is planning to hold additional hearings on fair trade after Congress adjourns. The subcommittee is the third congressional group to study the discount-price maintenance problem this year.

Sen. Bible's decision to hold additional hearings, either in Washington, D. C., or in other cities, effectively removed any chance of passage of a new fair trade law this year.

Michigan executive reports . . .

"Mississippi Tank T-1 Titan cuts delivery cost in half"

"My first high-capacity bobtail built by Mississippi Tank Company has actually replaced two other units," says Louis Marshall, president of Petgas Company of Petoskey, Mich. "The Titan is certainly a quality-built product that more than lives up to my expectations."



The combination of lightweight T-1 Steel and Mississippi Tank engineering enables Mississippi Tank Titan Delivery Units to earn extra profit every day they operate! Figure it out for yourself: compare the extra gallons per day you can deliver in a 3,075 wg capacity unit with those you now operate. Compare the costs-per-gallon for truck fuel, labor, depreciation, etc., and then add up the *extra dollars* a Mississippi Tank T-1 Delivery will net you *every day*. You'll find new Mississippi Tank Titans WILL PAY FOR THEMSELVES IN A FEW MONTHS! * You'll also agree that you're losing money every day you put off converting to T-1!

Our Engineers have wings!

Wherever you are, whatever your problem, give us a call and we'll quote on equipment tailored to your needs.

MISSISSIPPI TANK COMPANY
INCORPORATED
HATTIESBURG, MISSISSIPPI

For more facts and figures and free brochure, MAIL COUPON TODAY!

Want us to prove it? Use the Coupon!

Mississippi Tank Company, Inc.
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☐ Send free tank equipment brochure.
☐ Also give me without obligation, an estimate of the number of months it will take for new T-1 Titans to pay for themselves in my fleet. I operate —— delivery units, average capacity —— wg.

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COMPANY .....
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CITY and STATE .....

DELIVERY

ON TIME ALL OF THE TIME

The Tuloma customer is no clock watcher — he knows Tuloma LP-Gas is precision-timed to meet customer needs. Deliveries are made when he wants them, in trucks or tank cars from Tuloma's large transportation fleet. He knows, too, that Tuloma LP-Gas comes from plants, refineries and underground storage facilities strategically located for prompt deliveries all through the year. Don't be a clock watcher!

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Tuloma LP Gas

beyond the mains

BPN

WE NEED A TAX-EQUALITY LAW. Most of us must compete with other businesses that are exempt from all or most of the federal taxes. Few people realize the full extent of the advantages enjoyed by these tax-free businesses. All of us should know the facts--know what they mean--know what they lead to. In order to make clear what this tax-exempt status of competitors is doing to you and your business, we have worked it out in simple arithmetic. This example is theoretical. We admit it is oversimplified. But it does point out a condition that few people have seen in connection with tax-free co-operative businesses.

A corporation subject to the maximum income tax rate of 52 per cent requires at least 20 per cent profit on invested capital. This pays its taxes, rewards its stockholders, and sets aside a small surplus for growth. On the basis of 20 per cent before taxes, the figures look like this:

Profit before taxes	20.0 per cent
Left after 52 per cent taxes	9.6 per cent
Needed for dividends	6.0 per cent
Left for surplus	3.6 per cent

If this rate of profit can be made year after year, and the annual surplus is added to operating capital, the company's capital will double in about 22½ years. It works like compound interest.

A co-op can avoid all income taxes, and can, if the members desire, use all profits to build up operating capital. If it makes 20 per cent profit (net with no federal taxes) it can double its operating capital in approximately 3¾ years. This is one sixth of the time required for the above corporation to double its capital out of earnings. That looks like a stacked deck. It is, but let's go on figuring. The co-op can double its capital every 3¾ years. In the 22½ years required for the tax-paying corporation to double its capital once, the tax-free co-operative can double and redouble six times, ending up with 64 times the capital with which it started.

No co-op has ever pushed its tax-free advantage this far. But in case you did not realize it, the principle on which this example is based explains why co-ops can be such tough competition. It explains why some of them have been able to make such phenomenal growth while forcing their independent competitors to the wall. They are just pressing the advantage given to them by the law. There is nothing wrong, or socially or politically immoral, about the co-operative form of business. The only thing wrong is that the law gives them tax privileges that are denied to the private businesses with which they compete. It is long past time that this inequality should have been corrected.

Earlier this year there was hope that this great injustice would be corrected by Congress. The bill which would have taxed co-ops and private business on an equal basis died before it came up for a vote. It would probably have lost on the floor anyway, because the opposition was strongly organized and entrenched. Private business showed no such organized strength. The bill can be presented again in the next session of Congress. But we can't win without work. The National Tax Equality Association has been organized to carry on your fight. The LP-Gas Men's Committee for Tax Equality is its working unit in our industry. Join it and work. Its address is 1000 Connecticut Ave. N. W., Washington 6, D. C. And add your personal voice--tell your senators and congressmen how you want them to vote.

Earl Abell

The Tholstrup Ships for Service and Safety

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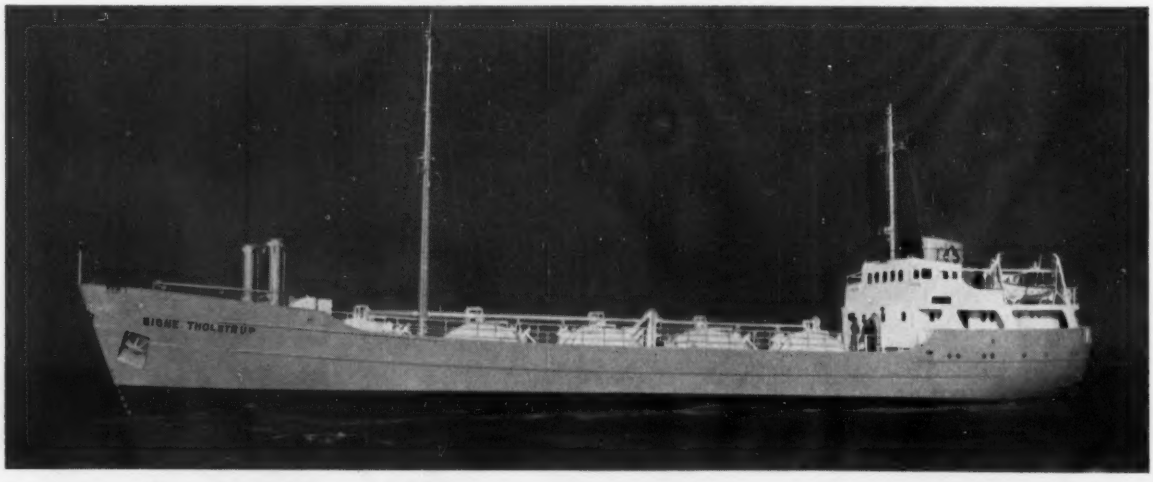

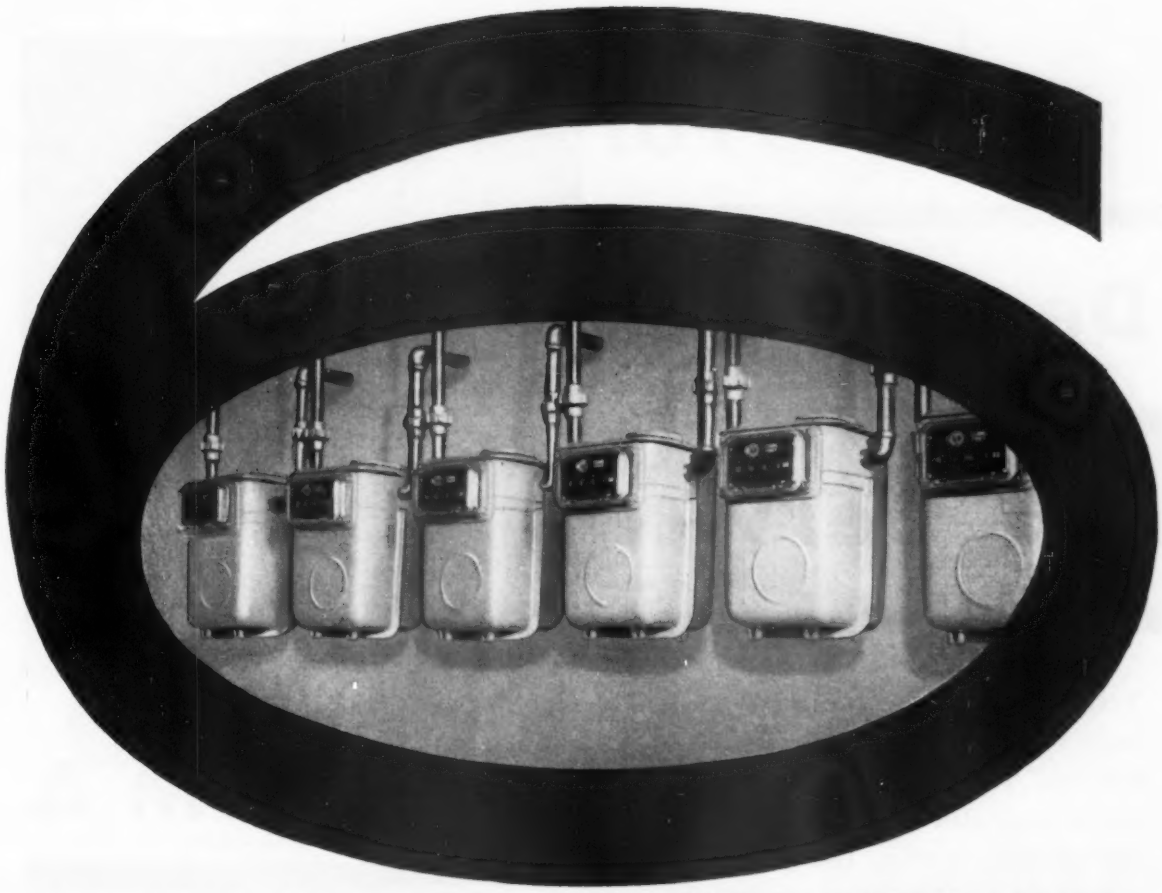

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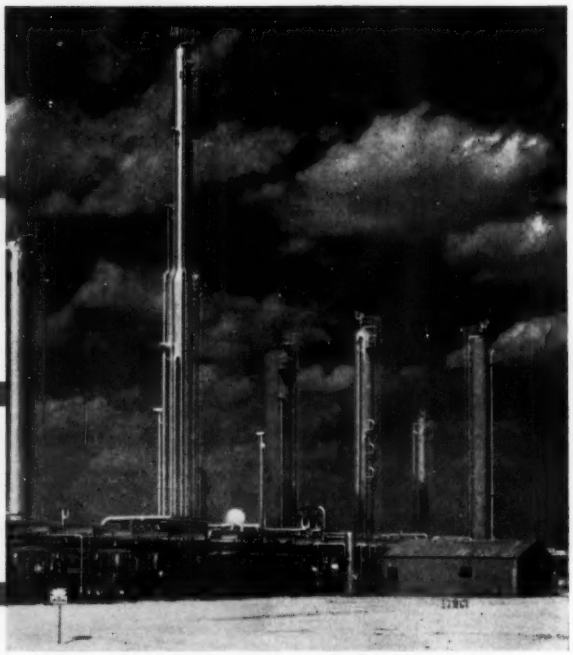

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HOW TO CUT DELIVERY COSTS

By CARL ABELL · Editor

MOST L. P. Gas dealers could double their profits on gas by making an extra cent per gallon. They need that extra cent, plus some more profits from other activities, to earn an adequate return on their investment. Where will that extra profit on gas come from?

There are only three possible sources—buy gas cheaper, sell it for more money, or cut the cost of moving the gas into the customer's tank. Most dealers agree that there is not too much hope of getting an extra cent of profit from either the producer or the customer. That puts the problem right back in the dealer's lap. If he gets it he must squeeze it out of his operating costs.

The largest single item of operating expense is the cost of delivering gas from the storage plant to the customer's tank. This looks like the best place to start in reducing operating costs.

While we are looking at the cost of operating this delivery truck that takes the gas from the storage plant to the customer's tank, let's not be fooled by any partial picture like "cost per miles," which is what the truck salesman talks about when he sells you a chassis. That is important in its own small way, but there are a lot of other factors that add up to a good deal more than "cost per mile" which must also be considered. What we want to arrive at is the lowest possible cost for delivering a gallon of gas.

And in arriving at this lowest cost per gallon, time is the controlling factor almost every step of the way. Many of the regular operating expenses are costly in relation to time—the driver's pay is so much per month. Payments on

BPN **TRANSPORTATION ISSUE**

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the truck must be met at so much per month. Insurance is so much per month. When you get all through adding up these time charges, and then put in the amount that it costs to supply gas, oil, maintenance, and repairs for the vehicle for an average month's mileage, you get a sizeable total, most of which can not be reduced.

Yet it is necessary to reduce the cost of delivery those gallons of gas. How do we do that? We do it by saving time here and there so that with each truck, on each working day, more gallons of gas get delivered, at a lower total cost per gallon.

If the costs remain stationary, or practically that, while the production goes up, the cost per gallon must certainly go down.

Nine cents per minute

Before we start looking for places to save time, let's break this time cost down a little and see what we are shooting for.

The average cost of owning and operating a bulk truck, according to several of the organizations in the business which go in for cost accounting, is now between $5.00 and $5.50 per working hour.

We are looking for time savings by the minute, so we need to know what a minute of the truck's time actually costs. Nine cents is a good approximate figure on the inflationary side of the general average—9 cents per minute, and don't think it costs your company much less. As long as it is not parked for the night, it costs that amount per minute whether it is running on the road, loading, unloading, or loafing. But it is only earning when it is putting gas into a customer's tank.

What we are shooting for, therefore, is to get as many gallons as possible into customers' tanks during the working day—to hold down on the lost time, and get as much out of the productive time as can be arranged.

Loading time

Truck time can be lost at the plant, in great big unproductive gobs, through no fault of the truck. It still costs 9 cents per minute, and must be chalked up to delivery costs. Take the example we showed you last month (BPN, Aug. 1958, pages 39-42) of a plant at which it had formerly taken 40 minutes to fill a 1200-gal. bulk truck. Improvements in the pumping system cut the loading time to 12 minutes. That's a saving of 28 minutes, worth $2.52 in the loading of just one undersized truck.

Now let's make it worse. Suppose two of those little old bob-tails come back for a refill in the middle of the day, and one pulls in at the plant gate right after the other. In the old days the quickest possible time to get the two trucks on their way was 80 minutes. With that delay it was formerly necessary for drivers to remain on the route after hours, at time-and-a-half. All this goes in as part of the cost of delivering the average gallon of fuel. See where we are getting? Plant improvements that speed up operations pay off in a hurry.

Running time

Now we have this truck loaded and out the plant gate. What do we do about saving some running time? There are legal speed limits that should be observed, also safe speed limits under special conditions which tend to cut down the average speed.

How does the driver save time and still drive safely? Well, where is time lost? In accelerating from stops, in working through traffic in towns, in pulling up hills, and in maneuvering the truck into and out of the places where it has to stop to make deliveries.

It does not take much power to roll a loaded truck on an open level highway at the legal or the safe speed. But unless that truck has plenty of power it loses a lot of time (at 9 cents per minute) under the four conditions mentioned above. Suppose this truck is on the road just four out of its eight hours per day, and that some extra power will enable it to save just 5 per cent of its running time. (In suburban, hilly or mountainous terrain, the saving will be much greater than that.) That's 12 minutes—54 cents.

Now we arrive at the customer's yard, connect the hose (or hoses) and start to put 180 gal. of fuel into the customer's tank. It takes time to connect the hose(s), open the valves, and start the pump. Let's see what we can do to cut down lost time here.

Where was the hose? Coiled up on a reel, or scrambled in a cabinet? The hose can be strung out to the tank and reloaded faster if it is carried on a power-operated reel. It also lasts considerably longer.

Now those valves — must the driver screw them open by the minute, or can he flip them open in a second? It sounds small, but we are talking about a difference in operating time that can average from 5 to 7 minutes per stop (at 9 cents per minute). How many stops per day shall we multiply this by? Hose reels and quick acting valves pay for themselves awfully fast.

Now we start to pump those 180 gal. into the customer's tank. Do we use a vapor return hose, a spray fill connection into the vapor space, or the old type filling connection with the tube down into the liquid with no vapor return? Of course, in most states the Weights and Measures people do not like to have dealers putting some of the customer's gas back into the truck tank through a vapor return hose.

As between the modern vapor space filling and the out-moded filling below the liquid level, the pumping time may show 10 per cent difference. Is it worth while to put spray type valves into those old customer tanks? It obviously is.

We haven't said a word about pumping speed on the truck. Most of the older trucks were equipped with 30 gpm pumps, and few of them could make it because of high restrictions in the liquid circuit, beginning with a high-resistance excess flow valve, numerous elbows, several globe valves, and generally undersized plumbing throughout. So the 30 gpm pump frequently put out about 18 or 20 gpm.

We are talking now about 9 to 10 minutes to pump 180 gal., and it still costs 9 cents per minute. With well-designed plumbing of adequate size, and straight-through valves, that 30 gpm pump will put

Improved service for more customers and more profits for the dealer resulted from use of this Nor-Tex 2500 wg bulk truck.

30 gpm into the customer's tank. That saves one third of the pumping time. (See "How to Pump Faster at Less Cost" on page 50.)

But why stop there? It is possible to use a 50 or even a 60 gpm pump on a truck, and have it work right up to capacity. Many modern bulk trucks transfer fuel that fast. The pumping time at 60 gpm saves ⅔ of the time required at 20 gpm. Let's say that is 6 minutes per stop—54 cents. How many times a day does this truck connect up to customers' tanks?

Refill time

Okay, we save all that operating time, and before the day is over the truck is empty. It has to go back to the plant to refill, and this runs into a lot of miles. Dead, unproductive miles. Costly miles that impose wear and tear on the chassis and tires, consume gas and oil, use up minutes at 9 cents each.

What's the answer—bigger tank capacity? It may or may not be the case. The really large bulk trucks now carry a net load of around 2800 gal. Perhaps by the use of T-1 steel in tanks and lightweight alloys for chassis parts, this capacity can be boosted to above 3000 gal. In the transport end of the business, where maximum payload is almighty important, the trends are in that direction, and developments are taking place very fast. We're already seeing developments in that direction for special cases in the bulk truck end of the business.

In the meantime, the size of the new bulk trucks for any particular operation should be based on conditions in that operation. In many cases, operations that now require five of the old under-powered and under-capacity trucks could be handled much better with four new units that can move faster where the going is tough, and can carry larger loads. Occasionally three new trucks could do the work now requiring five old trucks. So how large should your new bulk truck tanks be?

Frankly, you may need two or three sizes for the most efficient operation on your different routes, or it may be that a change to the largest size you can get will pay off. That depends on your particular routes. If by using the largest tanks available the truck can stay out on the route all day, without returning to the plant for refilling, by all means consider the jumbo job.

If the largest size is used in concentrated territory, must return for refilling, but can not complete delivering the second full load in the normal working day, there is no point in having such a large and cumbersome job.

The "big boy" costs more to buy, and more per mile to operate. The right size is the one that will do the biggest day's work most economically — with a weather eye cocked to future requirements. There are no longer very many places where a truck as small as 1200 gal. can be operated economically. And 1600 gal. is too small for most well-developed operations. It takes 2200 gal. and larger to fill the bill in an increasing percentage of cases.

Regardless of size, the truck should not be handicapped by inadequate power, or with a time wasting plumbing and pumping system.

Dead run time

And before deciding on the size of your new trucks, it will be wise to see what can be done about your routing and scheduling to make it possible to deliver more gallons per truck mile. (See "So You Want to Go 'On the Air'" on page 38.)

The size of the customer tanks may also have a bearing on this problem. Many domestic tanks are too small for economical and profitable service. Doubling the size of a small tank will frequently cut as much as one third out of the cost of serving that customer. A little work in this direction will often make it highly profitable to use a larger truck.

And what can you do about filling the gaps between customers that are spaced some distance apart? It often pays richly to pick up some new customers who can be served without extending the route mileage.

So far we have dealt largely with principles and generalities. Now let's look into some real case histories and specific improvements to show what has been accomplished in cutting the cost per gallon of making deliveries.

Acme Butane did it

Acme Butane and Appliances, Fresno, Calif., serves a number of routes, including one that extends about 50 to 70 miles up into the Sierra Nevada mountains. Acme started this route with a small and rather nimble truck, which was soon outgrown. The next truck on the route carried 1700 net gal. of propane, had a 302 cu in. engine, two speed rear axle, and five speed forward transmission. The territory served was growing rapidly, both with summer and with year-round residents. Last season that 1700 gal. truck had all it could do to serve the current customers, but more people wanted gas.

Acme had a problem. Should

they put on a bigger and more powerful truck, or should they route another truck in to help carry the extra load? Or should they just fail to render adequate service to the mountain communities and thereby invite more competition than they already had?

Their answer was a new, larger and more powerful delivery truck with some extra features seldom used in LPG delivery equipment, but highly valuable in this particular operation. The new truck carries 2450 net gallons—750 more than the previous job, an increase of almost 40 per cent. Twin tanks were used to hold down center of gravity.

Since these tanks had to be rather long to hold the required gallons, and the truck had to be highly maneuverable to get around in some of the steep and crooked driveways up in the mountain villages, a Ford C-800 Tilt Cab chassis with cab over engine was selected. The new truck is 2 ft shorter overall than the previous truck, which had the conventional type cab. It turns in a 58-ft radius, considerably less than the other truck required.

The Ford has a 332 cu. in. engine with 67 more horsepower than the earlier job. It also has the Ford Transmatic transmission, like the World War II tanks. It shifts automatically through six forward speeds. This transmission has a hydraulic retarder, similar to those used in the logging industry, which handles most of the braking load and permits brake life of months instead of weeks.

Large size plumbing

The plumbing is large size, with 2-in. Viking pump, 1½-in. Neptune meter, and 200 ft of ¾-in. lightweight hose on the Hannay reel. That length of hose is necessary to reach some of the customer tanks. Filling could take place a little faster through a 1-in. hose, but where the driver has to carry the hose up a long, steep hill, the extra weight is just too much to handle. The pumping speed through the ¾-in. hose is 45 gpm, which is certainly not bad.

From the above data this sounds like a very expensive truck. It cost more to buy than the former 1700-gal. truck, to be sure. It may cost more per mile to operate. Time will tell. But here is the pay-off. This truck is now serving an additional 100 customers in less working time per day than was required for last year's operation with the smaller, less powerful, slower pumping truck. The average amount of fuel delivered per day has gone up more than 40 per cent. Has this made a difference in the profits on that route? It certainly has. Look at some of the simple facts of life that have so often been ignored:

In the day's operation the truck turns in absolutely no profit until it has delivered enough gas to pay the day's expenses, including, of course, the cost of the fuel that has been delivered up to that moment. All fixed expenses, including interest, taxes, insurance, depreciation, pro-rata of the plant overhead and the driver's salary have then been paid, After that the profits start. The company must buy the fuel that is delivered, and pay for the gas, oil, tires and truck maintenance required to make the additional deliveries. But with the small exception of this extra truck operating cost, after the day's fixed costs have been met the gross profit comes very close to being the net profit.

Double net profit

Carrying this on to its logical conclusion, a study of the operating records of a great many companies reveals that most of them are making a net profit of less than 10 per cent on their turn-over. How much more fuel must be delivered by the truck in a day to double the net profit? Ten per cent will not quite make it, but with an increase of from 12 to 15 per cent it becomes a sure thing.

In some cases it will require a larger, faster and more efficient truck to make this possible, but there are thousands of cases in which such an increase in profit can be made merely by improving the plumbing system of the present trucks to save a little of the time that is now being lost. Many cases have come to our attention in which pumping speed has been increased as much as 40 per cent, with additional time savings resulting from substitution of quick-acting valves.

With approximately 9 cents per minute at stake, it might be worth looking into. This could help "hold the line" until the time comes to put on a larger and more efficient truck.

Weighty problem

Now let's look at a few other matters that are worth considering in selecting or designing new bulk trucks.

First, there's the matter of weight. In all states there is a limit to the amount of weight that can be carried on an axle. Always there are physical limits to the load that can be carried by a tire. These factors set your load limit, which is made up of the dead weight of the empty truck plus the

Re-piping more than doubles pumping speed on seven trucks

Freeman Gas & Electric Co., Spartanburg, S. C., finally became fed up with the expensive time lost while its seven bulk trucks pumped LPG at rates of 5 to 16 gpm. The trucks were sent to Charlotte Tank Corp. for re-piping in an effort to increase the delivery rate.

The result? In every case the pumping rate has been doubled or better with the minimum pumping rate on any of the trucks now approximately 30 gpm.

Actually, the units should have been redesigned to obtain an even faster rate. But in the case of these seven, each had a 30 gpm meter. The re-piping job was therefore based on efficient pumping through the existing meters.

With pumping time cut in half or better, Freeman can now deliver far more LPG per day with the same number of trucks and men — hence far more profit.

pay-load of what you are moving.

It costs money to haul weight around. In this business it seems to average out between 10 and 15 cents per pound per year. Will it pay to save weight in the construction of the truck? Yes, provided that it does not sacrifice necessary strength and durability. It never pays to overload a truck chassis, but in many cases it is very profitable to substitute a lighter and stronger material where it can take the beating, and if the extra cost of this material is not too great. If, in making this substitution, the truck can carry a greater payload, the profit multiplies. (See "What's This About T-1 Steel?" on page 33.)

We see this work out in a very practical way in the newer transports, in which many manufacturers are using higher strength steel in the tanks, and light weight alloys for wheels, frame members of trucks and for trailer parts, and frameless design in the trailers. By combining all of these features, the pay-load capacity of transports has been increased by between 2000 and 3000 gal. in the past few years. Some of these means of saving on dead weight are applicable to the construction of bulk delivery trucks.

There is now a definite trend toward the mounting of the pump, meter and all plumbing on the tank instead of the chassis. This has many advantages. The tank will outlast several trucks, and over the years it is more economical to transfer the old tank to the new chassis. With the fuel transfer equipment suspended from the tank it becomes possible to pick the entire assembly up as a unit and set it down on the new truck. This saves hours of shop time in making the transfer. Also there is no distortion of flexing in the plumbing if mounted on the tank, so the piping can be welded to make it permanently leak-free.

With the pump and meter mounted on the truck frame, the piping must have numerous threaded joints to provide flexibility. The unavoidable movement in the joints causes wear and results in leaks, which cause loss of truck time as well as shop expense to correct.

The matter of brakes

Brakes are a major item of maintenance expense on bulk trucks. Hydraulic brakes are generally used to get the benefits of perfect equalization and multiplication of pressure. The hydraulic part of the system is subject to wear, the wheel cylinders frequently develop leaks which result in grabbing brakes, and the flexible tubes to the wheels frequently become damaged.

Air brakes cost more and weigh more, but the frequency of failures and the cost of maintenance are both considerably less than with the hydraulic systems. In increasing numbers we see them appearing on the larger bulk trucks, particularly those in the "custom-built" class.

Valley Butane Co., also of Fresno, Calif., has just put a new Ford C-800 in service that has been equipped with Westinghouse air brakes. With the tank of compressed air available, the company went one step farther and installed power operating cylinders to open and close the Okadee valves on the liquid and vapor lines of both tanks.

The small control levers are located in front of the meter and right beside the power-take-off control for the pump. The driver can open or close the valves for one tank with a single motion of one hand. By using both hands he can switch from one tank to the other in less than a second. This combines speed with safety.

The controls are not expensive, and Valley Butane thinks it is worth while. And just in case the driver forgets to close the valves before he starts to drive off, an inter-connecting control does it for him. The truck can not be moved until all four of these vital valves are closed.

Central controls

Another important time saver—now generally included in new bulk trucks of both the quantity production and the custom-built classes—is the grouping of all necessary controls for the pumping operation, and the meter, in one central location. This enables the driver to control the complete pumping operation from one spot, without moving around.

With quick-acting valves on the liquid and vapor lines, extension handles can be provided which extend out through the cabinet door when the valves are open. The door can not be closed until all the valves are shut. Some of these improvements can be made on old trucks that are to be continued in service. They will help to save minutes at each delivery stop (at 9 cents per minute), and also add a valuable factor of safety.

The next five years will be the "shake-down period" that separates the men from the boys in the LPG industry. Each company will need to make its operation more efficient—squeeze down on the cost so the profit per gallon will be greater. The greatest opportunity to save costs is in saving time, so more fuel can be delivered per vehicle day and per vehicle mile. There is nothing else in sight that will pay such a high return on a little extra thought and ingenuity. ■

With 2500 gal. payload capacity, more power, and improved plumbing, this truck delivers 40 per cent more fuel in less time than the lower powered 1700 gal. truck that was formerly used on the same mountain roads. See the case history in the accompanying article.

HOW TO CUT DELIVERY COSTS

. . . by using lightweight trucks

A symposium of ideas of the experts in the field, collected and presented by the editors of Butane-Propane News

What's all this about T-1 steel?

VANGAS INC., major Pacific Coast LPG chain, has calculated that during the life of an LPG transport, every pound that can be saved in the tare weight of the unit which can be converted to payload is worth $6. For this reason, transport manufacturers and LPG dealers have long worked together to reduce dead weight in every way possible. Most of this work was directed toward decreasing the weight of fenders, chassis, and other parts of the transport, but until recently little could be done with the heavy steel tank. The lightest steel used, ASTM-A202B, has a tensile or burst strength of 85,000 lb and tank walls have to be relatively thick to meet code requirements.

In 1953, United States Steel first marketed a new type of steel, commonly referred to as T-1. The introduction of T-1 into the fabrication of LPG transports and bulk trucks has opened new vistas in the quest for lighter weight and more payload. Not all transport and bulk truck manufacturers are using T-1, but a gradual shift in that direction is noticeable.

The editors of BUTANE-PROPANE *News* recently sought out several of the major transport and bulk truck tank fabricators in the United States and shot a series of eight questions at them on T-1 steel. Here are the questions and their answers:

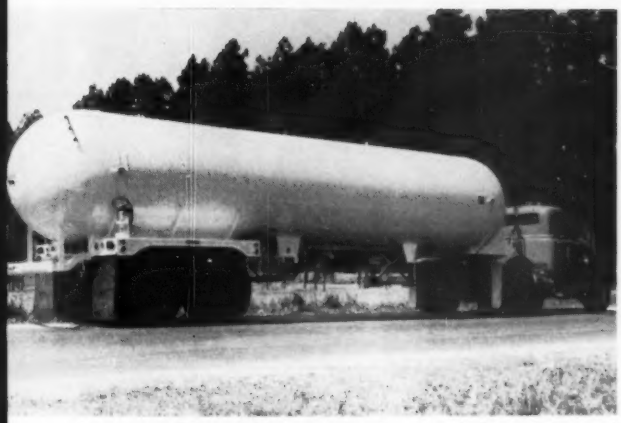
Q. What is T-1 steel?

A. T-1 is a low carbon alloyed steel, quenched and tempered to produce high tensile strength properties. It is tough and hard, something like armor plate. T-1 has a minimum tensile strength of 105,000 psi, compared to 85,000 psi for the nearest usable alternative, A202B steel plate. Since it has a greater strength of approximately 23.5 per cent, tank walls made of T-1 can be thinner than with material of less strength. T-1 contains nickel, molybdenum, vanadium, copper, and boron, which give it a combination of toughness, strength, and ready weldability.

Q. How much weight does T-1 save?

A. This varies with the manufacturer. Here are some examples. One manufacturer reports an 84 in. diameter 8050 wg vessel of A202 would weigh (finished)

A 9397 gal. widespread tandem T-1 transport manufactured by The J. B. Beaird Co. Extra payload: 500 gal.



Capacities of from 7600 to 10,650 gal. are available in Mississippi Tank Co.'s Load King T-1 transports.

Total weight of this Pressed Steel Tank Co. Hackney T-1 transport is only 52,180 lb with a 7635 gal. payload.

18,060 lb. The same unit made of T-1 would weigh 14,950 lb. This is a weight saving of 3110 lb. Another manufacturer compares an 8593 wg transport of A202 with the same size transport of T-1. The result is 2307 lb less dead weight, a weight saving of 16.1 per cent. A third manufacturer puts it this way: an 8200 wg A202 transport can be replaced with a 9475 wg T-1 unit without changing the road dead weight. And a 3000 wg bulk truck of T-1 weighs no more than do 2200 to 2400 wg A202 units.

Q. What does this weight saving mean to the LPG dealer?

A. It means greater payloads, hence fewer round trips, hence lower operating costs, hence less cost per gallon, hence more profit per gallon. The 3110 lb saved in the first weight saving example above, would equal an additional 723 gal. of propane that could be hauled on the same trip at no extra cost. If the transport makes, say, 300 trips per year, this is 219,600 extra gallons of payload or 22 tank cars. One manufacturer reports savings of as much as $2000 per year for a single T-1 transport.

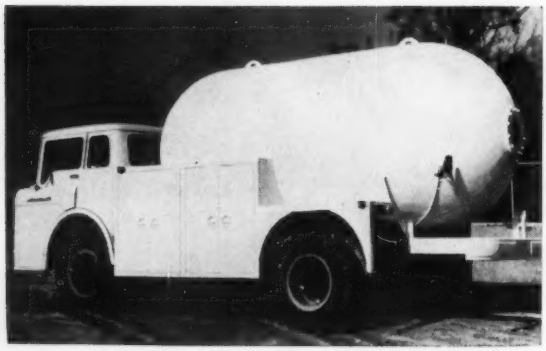
Q. How much more does a T-1 unit cost?

A. This, too, varies with the manufacturer. A rule of thumb offered by one manufacturer is 16 cents per water gallon more than an A202. Another manufacturer reports 10 to 15 per cent more than a conventional unit. On an actual dollar basis, a third manufacturer offers an 8050 wg T-1 transport, less excise tax and special equipment, f.o.b. the factory, for $11,891. The same transport of A202 steel would cost $9910. The difference: $1981. All manufacturers agree that the greater initial cost will pay itself off in a short time—as soon as one season—and then the saving will be pure profit.

Q. What additional benefits does T-1 provide?

A. Since T-1 tanks must be welded inside and out, units are built with a manway. This permits periodic inspection and cleaning. T-1 is more than four times more resistant to corrosion due to its alloy content. It is better qualified to withstand continuous shock

Trinity Steel Co.'s T-1 blimp transport, showing calibrated filling outage gauges. Extra payload: 10 per cent.



This T-1 steel bobtail by Mississippi Tank offers capacities up to 3075 wg on a single 18,000 lb axle.

A Trinity T-1 bobtail with 3000 wg capacity. The truck weighs no more than a 2200 to 2400 wg A202B unit.

treatment, especially at low temperatures. It is more resistant to denting and bending.

Q. What drawbacks are there, if any?

A. All manufacturers responded that there were no drawbacks whatsoever for the buyer. Some additional problems have been encountered by the manufacturer (see next question). At least one firm is so enthusiastic about T-1 steel, it is making no other type of transports.

Q. What manufacturing problems have resulted from use of T-1 steel?

A. Many problems presented themselves and had to be solved, but these were no different than with any other new material. Fittings must be of T-1 steel and must be machined from T-1 plate. As more units are built, T-1 fittings will be more readily available with an eventual reduction of cost. More stringent code requirements must be adhered to in fabricating pressure vessels from T-1. New welding techniques had to be developed and welders had to have special training, in some cases. Rolling T-1 steel is more difficult. In general, therefore, T-1 tanks take longer to fabricate.

Q. What types and sizes of trucks are available in T-1 steel?

A. Transports are available from 7500 wg to more than 10,000 wg. Bulk trucks are available in T-1 steel only in big sizes, since on the whole, small size tanks would not be economical from T-1. T-1 bulk trucks therefore range around 3000 wg. ■

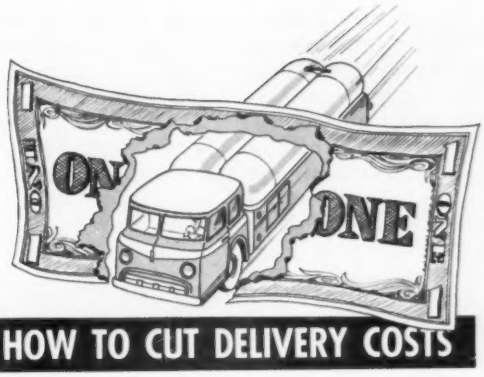
CASE HISTORY

Vangas chooses T-1 to cut delivery costs

REALIZING that cutting the dead weight of an LPG transport is the same as increasing profits, Vangas Inc., Fresno, Calif., has just taken delivery on four new T-1 transport units. Each has a net legal carrying capacity of 9820 gal. of propane.

The high capacity was realized in two ways: (1) Use of T-1 steel truck and trailers with tanks fabricated by Superior Tank using Fruehauf attachments. (2) Use of light Kenworth truck chassis employing all of the latest light weight options available— aluminum cab, Fiberglas fenders, aluminum frame and gear box housings, tubeless tires with high tensile steel wheels, elimination of auxiliary transmission by use of a two-speed rear-end on a single-drive attachment, and a Page and Page rear axle attachment.

Vangas reports that with the anticipated life, mileage, and gallons hauled, there was no lightweight option offered that was not substantially economical to purchase. Estimated projections showed that during the life of these units, every pound that could be saved in the tare weight which could be converted to payload was worth $6. ■



. . . by saving money on tires

Two-way stretch for truck tire mileage

By H. L. STEWART

NOBODY knows better than you do that your annual tire bill is too high. How much too high? That depends on how much or how little attention is paid to the proper selection, inspection and maintenance of the tires in your fleet.

Reliable information from tire companies gives us some amazing figures. They tell us that in the average small fleet, without a consistent and regular program of tire inspection and maintenance, between $200 and $300 of every $1,000 spent for tires goes down the drain.

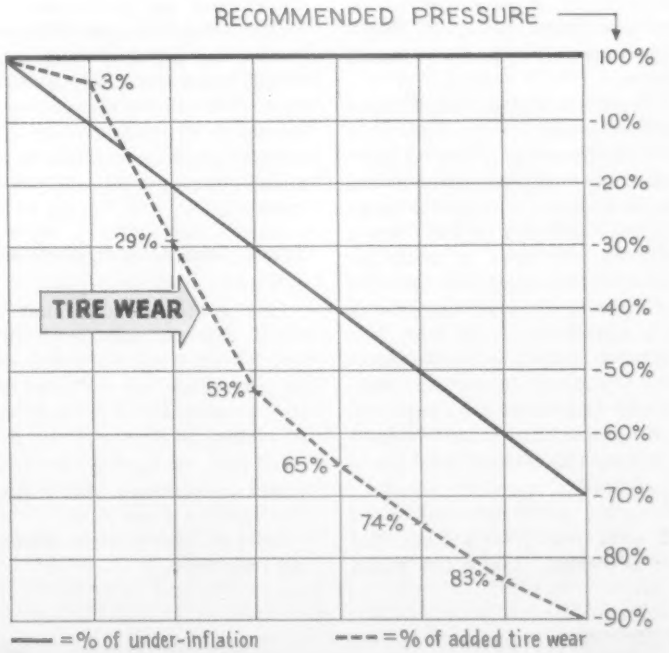
This statement refers only to the care that tires get after they are bought. It does not say anything about selecting the most economical tires for the job in the first place. The use of undersized tires will add considerably to the above losses.

The purpose of this article is to provide guidance for the LPG dealer in getting the right tires for the job, and then in giving the tires a chance to deliver the economical mileage that is built into them. There's more to it than meets the eye.

Your tire dealer can help you a great deal in getting full return on your tire dollars—if you select the right dealer. He will be an established and reputable dealer, representing one of the manufacturers having full research facilities, at least a quarter of a century of experience in building and servicing truck tires, and a continuous dealer training program.

Does that make sense? Why settle for less? It is *your* money that foots the bill—give yourself the best possible chance to come out ahead.

So that you will know what tire life is all about, ask your dealer to give you a copy of the latest truck tire service manual put out by the manufacturer that he represents.



If a truck tire carries 10 per cent less than recommended pressure, the wear is 3 per cent greater; if 20 per cent less than recommended pressure, the tire wear is 29 per cent excessive; if 30 per cent less than recommended pressure, the tire is wearing out 53 per cent faster than it ought to. If 40 per cent underinflated, the tire wear is 65 per cent excessive; and if 50 per cent underinflated, the excessive wear is 74 per cent.

ABOUT THE AUTHOR . . .
H. I. (Bert) Stewart has an especially good background for authoring this article for BPN. His experience includes both managing an L. P. gas plant and executive work with a company involved in stretching tire life.

If he can't dig up such a book, watch out—he may not know all that he should about tires either.

Most of the technical information that follows came from the service manuals published by tire companies. Interpretations and elaborations have been picked up from discussions with fleet operators using large numbers of tires.

There are several questions that need to be answered in selecting the right tires for your fleet. The first relates to tire size.

The right size for the job

Size plays an important part when you buy a tire. If you buy one which is undersized for the job it has to do and the load it has to carry, you're just as surely throwing money away as if you had bought a more expensive oversized tire to do the job. Here again consult your dealer, giving him the true facts about the maximum weight and weight distribution between the axles. Use current tire charts which your dealer always has available. In other words, don't pick a small boy to carry a man's load.

The type of tire you purchase is, of course, up to you—tubeless or tube type, rayon or nylon. Much has been said, pro and con, about all types.

It is quite true that the pioneers who first went for tubeless tires had their troubles. Advanced manufacturing methods, better wheel rims and other progressive steps have now made the tubeless tire a fixture in all types of industry. However, the condition of the wheel rim is of prime importance and a switchover from tube type to tubeless should never be made unless the rim is in perfect condition and free from even small irregularities such as could be caused by having been bent and then straightened.

Since the first rayon and nylon cord were made, both have had their advocates. While the rayon runs cooler and will increase in strength when heated (up to a point), the nylon is stronger and can therefore be made with thinner tire section, which helps hold down heat. Heat generated by heavy loads and highway speeds can obviously be dissipated faster by a thinner tire.

No tire is blowout-proof, in spite of what may be said to the contrary. The stronger the carcass, the less danger there is of a blowout. For use on rocky unpaved roads, tires with steel inserts have advantages and are now widely used on earth-moving equipment. So, if you have a rough gas route which is producing too many ruined tires from sharp stones, you might do well to give steel insert tires consideration.

Tread, too, is important and its choice should be determined by several different factors—the part of the country in which you operate, road surfaces travelled, seasonal climatic conditions, etc. For normal service in ideal, dry highway conditions, the small chunk is best, while coarser tread is more desirable for operation on unpaved, wet or slippery roads. Where heavy snows may be encountered, snow treads will give better traction but should be replaced with normal treads when the severe weather is past. Possibly good casings, recapped with snow treads where most of the driving would be at retarded speeds, could save you some money.

Truck tires seldom wear out

Why do tires wear out?

The actual fact is that most truck tires do not. Over 75 per cent of all truck tires are ruined by one cause or another before they actually die of old age. Aging, of course, is a factor, but a very small one—so small where an LPG dealer is concerned that it may be discounted a great deal.

Let's set down other deteriorating influences.

First, normal wear—which is inevitable, but all too often is not the sole, or even principal, cause of deterioration.

Second, abuse. This is usually at the hands of the driver and comes in several different forms. Panic stops, for instance, are sometimes necessary but if proper distances are kept behind preceding vehicles, they will happen only on rare occasions. Should you skid a tire, it will, of course, take off rubber. Just how much will depend on the load, how fast you are traveling and how far you skid. A flat spot sufficient to cause vibration can result from a panic stop. Vibrations can cause metal fatigue which may result in a broken axle.

A very good rule to follow is to make sure your wheels are well balanced and tires have no flat spots. You can check this by jacking up the wheels and putting a piece of chalk in a fixed position against the face of the tire and rotating the wheel. Remember, no tire is perfectly round, but the rounder the better.

Driving through and over sharp, rocky terrain is obviously rough on tires. Such driving, if unavoidable, should be done at greatly reduced speeds. A tire will not be cut by a sharp or jagged object nearly as readily at slow speeds.

Another, though less obvious, cause of deterioration is exposure to oil leakage. Never let your vehicle stand for any appreciable period on an oil- or grease-soaked floor. If your crankcase is leaking, see that the leak is immediately plugged and wipe up the oil. Your tires will last longer as a result.

Improper inflation costs money

Now for the biggest contributing factor to your tire deterioration—neglect.

The 18 tires on this transport represent an important investment. Proper selection and care will provide much higher returns.

"This does not apply to *me*" you may say. "My driver kicks or raps his tires every morning and my tire serviceman checks them diligently once a week."

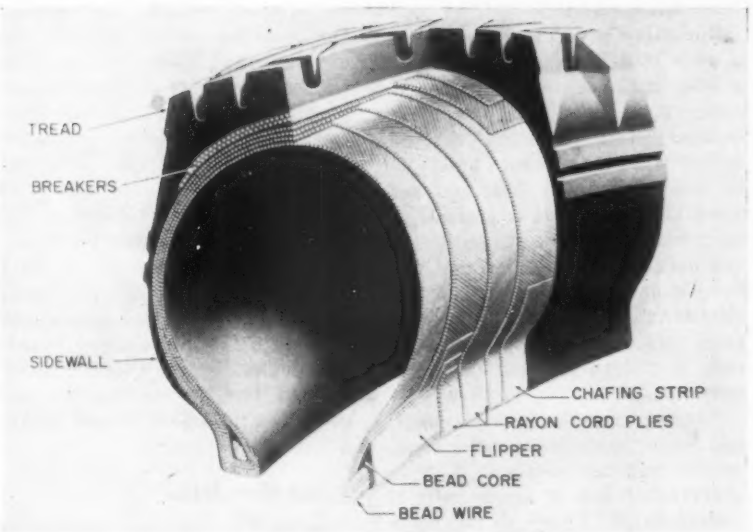
But this may miss the facts by a country mile. Neither your driver nor your serviceman pays your tire bills. Let's analyze this situation.

The driver, by kicking or rapping a tire, can determine only one of two facts—either it has air in it or it does not. How much or how little air it has, he does not know. A tire that should carry 70 lb pressure could pick up a slow leak on Monday at 4:30 p.m. and your tire serviceman not be around until the following Saturday morning. Early on Tuesday the driver kicks or raps the tire but drives away quite unaware that, instead of 70 lb, the tire is carrying only 40 lb. As a result, your tire, if not ruined, may be seriously damaged and the cost of that damage cuts right into your net profit (see chart).

A conventional tire pressure gauge is one answer to proper inflation. Of course, a gauge itself is of no use unless it is used. Regular checking times might be set up, such as when the truck is about to leave in the morning and when it comes in in the evening—or—every time it is loaded. This does, of course, consume time, but if it can be enforced, the time is well spent.

Another way of keeping accurate check is with a new type of tire pressure indicator recently put on the market. It is carried on each tire and gives a constant check. The indicator replaces the valve cap and has a little red button which is clearly visible as long as tire pressure is alright. The red button disappears when pressure drops a few pounds. It is preset for the specific tire pressure you carry and permits the driver to walk around his rig at any stop and in a few seconds assure himself that every tire is properly inflated. The cost is only a little over a dollar each.

While on the subject of underinflation, we should also consider what happens when a pair of dual tires is unequally inflated. Obviously, the one with the most pressure carries the largest share of the load. This may seriously overload that particular tire. While underinflation will lead to overheating in a tire carrying a full load, because of extra friction in the carcass, in this case the underinflated tire does not suffer so much from heat as the one that has the greater pressure. Its temperature goes up because of the overloading.



This cross section of a typical tire body reveals the structural members that give strength and flexibility to the tire. The tread rubber gives traction and protection to the tire body. Breakers, formed from strands of rayon or such strong cord and in some cases, strands of wire, act as a buffer between road shock and the tire body. The chafing strip is an extra reinforcing fabric layer in the area where the wheel rim and the tire come together. Cord plies, which form the main structural body of the tire, consist of layers of tough parallel cords that run diagonally opposite to the layers immediately above or below. The flipper, forming the bead core, is a fabric covering for the bead wire. The bead wire gives form and strength to the inside circumference of the tire body. The cord plies in a tire vary in number and material, depending on the size of the tire and the uses for which the tire is intended.

Equal load distribution

Now suppose we have all the tires inflated to the proper pressure and have set up the means of keeping them that way through daily visual checks. Does that guarantee that they will all be carrying the same load? It does not—unless you use some common sense in pairing them up on your dual wheels.

If you put a new tire and a worn tire on the same dual, they will not have the same diameter because some of the tread is worn off the old tire. So the new tire carries more than its share of the load, and the old tire takes life easy. We told you earlier about the disadvantages of overloading tires. Therefore, in putting tires on dual wheels, their diameters should be matched as closely as possible, so they will carry equal loads.

Now, if the diameters do not quite match, what should we do with the one that is larger? Put it on the inside or the outside rim? Let's figure it out. Most paved roads are "crowned." They are higher in the center than on the edges, which, in cross section, gives us a curve or arc. If the tires on the dual wheels are of exactly the same diameter, the inside tires are carrying more weight than the outside pair.

We cannot equalize the load under all conditions, because road crowns are not uniform and the truck is not always operating on paved roads. But we will come closest to equalization under most conditions if the outside tires have a slightly larger diameter than the inside tires.

Keep 'em cool

Heat is the biggest tire destroyer of all. Tires would probably last twice to three times as long if

there was a way to keep them cool.

One thing is well to remember—if your load is to be carried over a long distance in hot weather, make sure your tires are properly inflated before starting. Then, no matter what the pressure builds up to due to highway heat, do not bleed them down. It is possible to start with 70 lb pressure and, after two hours of driving, find that you have 90 or even 100 lb. Letting the tire down again to 70 would generate still more heat and could result in failure or even fire in a new tire.

Greater speeds, heavier loads, and longer hauls cause hotter tires. A tire will not overheat if it is overinflated but it surely will if underinflated. This does not mean that you should carry more air than is recommended, but if you had to choose between the two, the harder tire will get you farther, safer.

The worst that can happen as the result of loss of tire pressure while running is to get the tire so hot that it catches fire. While this is rare, it does happen. The Los Angeles fire marshal reports six such cases in one year. There were probably several more cases that he did not contact. This matter has been the subject of study and experiment by several technical societies (Society of Automotive Engineers, Tire Manufacturers Association, etc.). They found that it is possible for a fire to break out as much as a minute after the truck has been stopped in a tire that has been run underinflated.

Recently a carrier picked up a load of Park & Tilford "giggle juice" at San Pedro Harbor and started to Los Angeles, a distance of 25 miles. Due to a flat or underinflated tire, a fire resulted and destroyed the whole rig and load at a loss of $150,000.

Avoid slow leaks

Since it is especially undesirable to have this happen under a loaded LPG truck, drivers should be trained to use every possible precaution to avoid punctures, stone bruises, or anything else that might result in damage to the casing that could later result in a slow leak, which might go unnoticed long enough to result in a tire fire.

These slow leaks might also result from carelessness in putting tubes into casings, either when mounting new tires or when making repairs. If the valve stem is stretched out of position to get it through the hole, or the tube is creased or folded because it is not properly centered, a slow leak is likely to occur at some later date.

Proper procedure in assembling a tube type tire is to inflate the tube to approximately the size it will occupy in the casing, centralize it as well as possible, and then put the pair on the rim with the valve stem lined up exactly with the hole in the rim. When the assembly is complete, the tire should be inflated to its normal pressure, after which the valve core should be removed to allow all pressure to escape. While this is happening, the tube will conform perfectly in position. It can then be reinflated with the assurance that there will be no future leaks from the above causes.

Tires cost money—every LPG dealer knows that. Through proper selection and proper use, the money can be well spent instead of going down the drain. Today's tires are the result of years of engineering and testing and are manufactured to give the greatest wear, safety, and satisfaction at the least cost. The rest is up to you. ■

How to cut delivery costs? Use donkeys!

RAVINES, canyons, or up steep rocky mountains where there are no roads, the butane must get through. Whether it's a big ranch which can be reached with a transport tank or a mountain hut where delivery has to be made by donkey, the Espanola Valley Butane will get the job done.

In order to make delivery to customers who live in remote, hard-to-reach areas, H. P. Freeman, owner of the Espanola Valley Butane, delivers the fuel on donkey back.

Espanola Valley Butane uses donkeys to deliver LPG to areas inaccessible to trucks.

Mr. Freeman got the idea for delivering by "donkey express" when watching mountaineers use wood as fuel after going into the mountains, chopping wood, then hauling it out by donkey loads.

Now the company does all the wood chopping and hauling that needs to be done—by supplying butane for fuel—thus the slogan, "let us chop your wood."

A visitor to Espanola Valley Butane might be stunned by seeing two extremes in transportation at the plant—a butane-loaded donkey standing side-by-side with a huge Lubbock Machine LPG transport. ■

. . . by using two-way radio

So you want to go "on the air"?

By WILLIAM W. CLARK • Eastern Editor, with the cooperation of Allen B. DuMont Laboratories, General Electric Co., and Radio Corporation of America

"I THINK I'd like to install two-way radio. How do I go about it?"

This is a question that more and more LPG dealers are asking, and even more may be asking it in the future as the FCC begins issuing licenses under the new Business Radio Service classification. And it's a valid question. While there is nothing mysterious about mobile radio, it's a subject that has many facets.

First and foremost, of course, is this: Is two-way radio a paying proposition?

As a reader of BPN, you already know a great deal about the advantages it offers.* By relating these advantages to your own operations, you can translate them into benefits to yourself. Then the question resolves itself into:

"Is it worth the cost?"

The best way to answer that is with another question: "Is radio worth between 50 cents and $1 per vehicle per day?" This is the approximate range of operating costs — everything included — as estimated by one of the pioneers in two-way radio systems, Fred Link of Allen B. DuMont Laboratories Inc. Included is amortization and depreciation, cost of money, servicing costs—the entire bill.

Your costs should fall somewhere within this range. Just where will depend on many factors—number of units, ratio of mobile units to base units, range of operations, etc. Only your supplier can tell with any accuracy what they will be.

Having decided that the system will be worth while, your second question, obviously, would be:

"Am I eligible to operate a radio station for my business?"

As an L. P. gas dealer, you are now eligible in two classifications. But before August 1, 1958, there was only one service available to the industry—The Special Industrial Radio Service. You were (and are) eligible for this if you could meet the qualifications listed under Sec. 11.501 of Subpart K-Special Industrial Radio Service, of the FCC rules, which states:

"The following persons are eligible to hold authorizations to operate radio stations in the Special Industrial Radio Service . . .

"(d) Persons operating a commercial business regularly rendering certain specialized services essential either to industrial operation or public help. Eligibility for these specialized services is limited to the following:

. . . "(7) The delivery of ice or fuel to the consumer in solid, liquid, or gaseous form for heating, lighting, refrigerating or power generation purposes, by means other than pipelines or railroads."

Obviously, a typical L. P. gas dealer falls into this category.

"What would a license in this category permit me to do?"

Section 11.502 of the same code states that all stations licensed to operate within this service under

*Feb., '57, page 25; March, '58, page 44; April, '58, page 35; May, '58, page 25.

Photo courtesy Allen B. DuMont Laboratories

Drivers using mobile radio units, like that above, need no special permits or training to use radio. Radio control head is shown under dashboard, speaker is mounted on top. In many instances, speaker is mounted under dash, out of sight.

the eligibility stipulations shall be "strictly confined to those activities on which the eligibility was established, except for transmissions relating to any immediate emergency involving the safety of life or property. Communications relating to any of the following shall not be transmitted by any station licensed in the Special Industrial Radio Service:

(1) Sales reports, or the dispatch of salesmen.

(2) Payrolls, accounting, or inventory control.

(3) Any message relating to the retail delivery of an item or product, **except where such retail delivery is specifically included in the eligibility provisions of this subpart.***

(4) Any message where the time element is not of immediate importance."

"What is the new service now available?"

As of August 1, 1958, the Business Radio Service has been opened for use of L. P. gas operators as well as others. This service is less restrictive than the Special Industrial Radio Service. Persons who qualify for the Special Industrial Radio Service are also automatically eligible for the Business Radio Service. Under the latter, the L. P. gas dealer not only is allowed to use his system for all purposes allowed under the Special Industrial Radio Service; but he is also permitted to use radio for the four purposes which were specifically barred under the Special Industrial Radio Service—that is, sales reports, etc.; payrolls, etc.; retail delivery, etc.; and other messages where the time element is not of immediate importance. In other words, he can use this service for almost anything that is not against public policy or illegal. Apparently, the scope is about as broad as it would appear to be.

"Which of these two services should I use?"

Since the new service is obviously broader, at first glance it may appear to have definite advantages for the dealer. However, it also has some severe drawbacks. While the Special Industrial Radio Service and other services are regulated by a coordinating committee, this one is not. Therefore, it lacks certain important safeguards against interference. It is conceivable that the band within which your frequency is allocated may become overcrowded. If it is, you may find yourself sharing a "party line" with a gabby neighbor. You wouldn't necessarily get area protection, so the periphery of the system could get pretty well cluttered up.

Your protection with SIRS is much better.

"What frequency will I operate on?"

Both services are available on three bands—25-54 megacycles, 144-174 megacycles, and 450-470 megacycles. These frequency allocations in two-way radio are similar to the frequency assignment system used for regular commercial broadcast radio; that is, each station is heard at a certain assigned spot within the broadcast band, and is reached by tuning into that position on the radio dial. Since it is tuned to a specific fixed frequency, all radio transmissions occurring on adjacent channels are excluded.

Even with SIRS, you may have to share a channel with one or more different companies. This depends upon the availability of frequencies in your particular area. Right now there are several cases where as many as four different companies share the same channel. This becomes just like a party line telephone in effect: each party must respect the rights of the others. However, it has been found that companies can operate in this manner and get along very nicely. And, again, with SIRS, each party is limited in what he can say. This automatically cuts down traffic.

If you are seriously considering adopting two-way radio, you would do well to write to the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for a copy of the Federal Communications Commission Rulings regarding two-way radio. The cost is 20 cents.

"Can I use both the Special Industrial Radio Service and the Business Radio Service?"

No, except under certain conditions; and if you do operate under the two services, you will have to have two completely separate mobile systems.

"What sort of licenses must I have?"

A two-way radio system must have one license for every base

*As, for example, the delivery of LPG.

station and all mobile radio equipment operating with that base station. When more than one base station and mobile equipment are involved, and the equipment is to take dispatches from all base stations, each of the base stations will have separate licenses, and the mobile units will be authorized under separate licenses.

A license may be issued for a system consisting simply of two mobile radio units; but a simple base station-to-base-station cannot be licensed.

The mobile equipment licenses are kept at the main station location next to the station license. You may add mobile units to your system at any time if your license provides for such increases. Each mobile unit must have a tag (FCC Form 452-C or other approved identity tag) attached to it listing the mobile call numbers, licensee's name, location of the transmitter records, frequency on which the transmitter is adjusted to operate, and the signature of the licensee.

"Must my men also be licensed?"

Yes! In the base station or at a remote control point, only a person who holds a Restricted Radio-Telephone Operator's permit, or a permit of higher grade, may operate the equipment. Non-holders of permits may operate the system only when in the presence of, and under the direct supervision of, a permit holder.

To obtain a Restricted Radio-Telephone Operator's Permit, you must first apply to the nearest FCC District Office, using FCC Form 753. There is no written examination, the only requirements being as follows:

1. Applicant must be able to speak and understand English.
2. Applicant must be able to keep a rough written log in English or other common language.
3. Applicant must be aware of FCC rules governing use of two-way radio.
4. Applicant must understand that he is responsible for keeping up-to-date with all FCC operating rules concerning his type of system.

The operator of the base station must have the permit on his person at all times when he is operating or supervising the operation of the base station.

No FCC permits are required of operators of mobile units in the vehicles. However, in most instances, it is wise for you to issue your own permits, as no one is to operate any mobile units without your express permission. If you would prefer, you can obtain Restricted Radio-Telephone Operator's Permits for the mobile operators. But in either case, it is your decision as to who shall use the mobile equipment.

"What equipment will I need?"

In the truck, the following pieces of equipment are included —the transmitter-receiver unit, the antenna, the loudspeaker, the "control head," which controls the volume, on-off, etc., and the microphone.

Photo courtesy Allen B. DuMont Laboratories

A dispatcher sends a truck to answer an "out of gas" call. Under new Business Radio Service classification, radio can also be used for purely sales calls.

Your base system may be either direct controlled or remotely controlled. Remote control, generally, is only necessary if you have to locate your transmitter on top of a hill, or at some other location in order to get the geographical coverage that is required. You might also want a repeater operation. This may be used instead of remote control units if extended communication ranges are required between mobile unit. This might occur in mountainous area where terrain features make radio reception difficult.

A repeater system functions in this way: Two-way transmissions are achieved by placing the repeater station on a hill. The base station located at headquarters transmits the message to the repeater, which in turn automatically relays the message to the mobile units. Mobile-to-station transmissions are made in the same way. Repeater systems are capable of practically every function that remote control systems can accomplish.

"What will the system cost me?"

In selecting a system, your supplier will take many factors into consideration. Primarily, of course, he will be interested in what job you want to perform. A basic factor will be the radius which you must cover. A base system can maintain communications with mobile instruments at a distance up to 50 miles; but this again is dependent upon other things including the power of the base station, the antenna height and location, and the characteristics of terrain. The more mountainous the area, the more difficulty you will experience in getting good range. Conversely, if you are operating in a small area, you can use the higher frequency band (450 megacycles) and get less interference from other two-way radio systems. However, this is called a "line-of-sight" operation since the antenna must "see" all equipment antennas tuned in to the system. Obviously, this band has serious limitations.

The lowest band (25-54 megacycles) is used for a larger area coverage since obstructions do

not cut down its effectiveness. Whereas in the 450 megacycle band you need no great amount of power, in this frequency, power is an important factor.

In between the two is the 150 megacycle band, and this has operating characteristics that fall somewhere between the two other bands.

All these things then must be considered in arriving at a price for the system. However, as a rule of thumb, we can quote prices from DuMont. The base station would cost anywhere from $600 to $2000 installed, according to power and facility requirements, such as local or remote control. The antenna and the antenna support installation prices range from about $100 upward. Mobile equipment with all accessories installed in a vehicle costs between $400 and $650—the exact price, again, depending upon the power requirements.

"Can I select any frequency and power level that I wish?"

On this matter, you are bound by FCC rules and regulations, Part II of the Industrial Radio Services which state as follows:

"The power which may be used by a station in the Special Industrial Radio Service shall be no more than the minimum required for satisfactory technical operation commensurate with the size of the area to be served and the local conditions which affect radio transmissions and reception.

. . . "All the applicants for, and licensees of stations in these services shall cooperate in the selection and use of the frequencies assigned in order to minimize interference and thereby obtain the most effective use of the authorized facilities."

"Are there any special problems involved in operating this equipment? Is there any training that I give my employees?"

The use of radio is quite simple and basic.

There are usually only three controls on a mobile unit unless a multi-frequency system is being used, in which case there will be four controls as follows:

1. On-Off switch
2. Volume control
3. Squelch control
4. Frequency Selector Switch (if a multi-frequency system)

To operate the equipment, first make sure the engine is running. If you are standing still, race the motor a little so the generator will charge. Then turn the ON-OFF switch to the ON position, and after a few seconds during which the equipment will warm up, turn the SQUELCH control clockwise as far as possible, which will give a loud hissing noise. Then turn the SQUELCH control counter-clockwise just far enough to make the hissing noise disappear. You are now ready to receive messages.

To transmit, first make sure no one else is talking on the channel. Press the microphone button, holding the mike about 2 or 3 inches from your mouth, and talk across it rather than into it. When you have finished speaking, release the mike button. This is important because you cannot receive incoming messages with it depressed. Always speak clearly and distinctly in your normal voice. Be brief, do not shout. Loud talking only disturbs your voice and makes it hard to understand. When you leave your truck, be sure to turn off your radio before you turn off the ignition. This will protect your battery.

You may find areas where reception is poor for one reason or another. You'll hear better and transmit better by moving your vehicle slowly a few yards or turning a corner to face another direction. You can partially overcome poor reception by turning your SQUELCH control clockwise. This makes your set somewhat more sensitive, although you'll hear more noise.

Each base station must identify itself through announcement of designated call numbers at the end of each transmission, or once every 30 minutes of the operational period, whichever the licensee may prefer.

New rulings just adopted by the Federal Communications Commission will have important effects on present and future users of two-way radio. Exactly what these new rules are and how they effect L. P. gas dealers will be presented in easy-to-understand manner by Motorola Inc. in the October issue of BPN.

"What are the rules governing transmission?"

Your operators must remember that the radio is a party line. They must be sure not to use profanity, including the milder forms of it, or you will be called to account for it. They also must be reminded to restrict the content of their messages to those that are essential for the business operation.

"What sort of log must I keep?"

Every base station must maintain a log, or operating diary. This must be kept up-to-date and maintained at the base station. Mobile units are not required to maintain separate logs, but records pertaining to mobile units must be kept at the base station.

The following information must be recorded in the log:

1. The date and time the station is on the air each day.
2. The signature (not just initials) of the operator and the time period on duty.
3. The call letters of other base stations contacted, and the date, time and approximate length of conversation. It is not necessary to "log" calls to and from mobile units except in certain services.
4. Tower lighting. If the station has a lighted tower, someone must check the tower lights each evening to make sure they are lighted. A log entry should be made showing the time and the date the tower lights were checked.

Other entries, pertaining to frequency, power, etc., must be made in the station record by the FCC-licensed service engineer. A log containing this information should always be kept at the main station for inspection by FCC representatives.

"What do I do with the logs?"

Logs must be retained for one year. It is important to know for

(*Continued on page* 113)

By CARL ABELL • Editor

HOW TO CUT DELIVERY COSTS

. . . by reducing service failures

"PM" prevents breakdowns, lost time, extra repair costs

MOST mechanical failures of trucks, and the delays that they cause, can be prevented by installing and systematically following a program of inspection and servicing at regular intervals. All successful truck and bus transportation companies use this method, because they have found that it reduces expenses and keeps the vehicles in service more days out of the year.

An unscheduled layoff for repairs is even more serious in the retail L. P. gas business than in most other types of transportation. The freight hauler, for example, can always obtain a substitute vehicle on short notice to handle his load. The bus operators always have extra vehicles in reserve to handle overloaded schedules or charter parties. The LPG dealer seldom has extra equipment available, and it is seldom possible to get a substitute vehicle.

Anything that can be done to keep vehicles from breaking down in service results in a great saving of time, expense and inconvenience. And if impending trouble can be taken care of before the failure occurs, it will frequently reduce or prevent damage to closely related parts of the truck.

Experienced vehicle operators who have used this "preventive maintenance system" will not get along without it. The day of ""breakdown and fix" maintenance in these good fleet operations is long since passed. The present successful method is to fix before the breakdown occurs.

Preventive maintenance requires that lubrication, inspection, adjustment and replacement shall be done on a schedule according to a plan based either on vehicle miles or elapsed time which causes the operations to be performed at approximately the predetermined mileage. A hundred miles more or less on operations that should be performed at 1000 or 5000 mile intervals will not make much difference, but allowing a 1000-mile lubrication or inspection go for 1500 miles is bad business. It allows the employes to form the habit of becoming careless in performing the routine jobs. It leads to "occasional maintenance," which is almost as bad as the breakdown and fix system.

A preventive maintenance system can be set up for any size fleet, from one vehicle up to as many as the largest company can use. It does not require a company shop or a staff mechanic, so long as it has the necessary plan and control. The control must be under the jurisdiction of some responsible person who is willing to do the necessary paper work and who has the courage to use a little authority.

Daily reports

Now let's set up the necessary steps to develop a workable preventive maintenance system for your operation. Regardless of size, it begins with daily reports supplied by the drivers. Most delivery systems include a daily report of deliveries, and it is quite customary to include blanks on these forms in which the driver records the speedometer reading at the end of the day, the amount of gas and oil supplied for the engine, and any items like tire repairs for which he has spent money while away from the home premises.

There should also be spaces in which the driver can make note of any operating defects that he has noticed, such as the need for brake adjustment, missing in the engine, low battery charge, weak starting motor, or any of the numerous items that indicate that a failure is coming up.

The driver carries out his responsibility in reporting the defect. After that it is somebody's responsibility to see that the necessary corrections are made before the breakdown occurs. In a small operation this may also be the driver. In a large operation it is generally the job of a mechanic to do the repairs. The point to be made here is that the responsibility for reporting defects and for correcting them are fixed, and it is up to the manager to see that these responsibilities are carried out. There will be an occasional driver who has an inferiority complex that will cause him to fail to report a defect,

feeling that it reflects on his ability as a driver. This man must be shown that failure to cooperate in the maintenance program is the real reflection on him, and that a good driver will always insist on having the maximum efficiency and safety in his vehicle.

Lube and inspection

The next step in preventive maintenance is to set up an adequate lubrication and inspection program. In a large operation this will generally be done in a company shop. There are very few small operations in which this procedure will be justified unless the company shop is organized to take in enough outside work to justify its existence.

An LPG operation that is financially interlinked with a motor vehicle service station might be an exception. Might be! But only if the man performing the lubrication and inspection has sufficient mechanical experience to perform the inspection competently.

It saves time and money to combine the lubrication and inspection jobs, but it defeats the maintenance program to permit incompetent inspection. The best informed general mechanic that can be obtained should make the inspections.

Generally the best place to have this done is at the agency where the truck was bought, or at least at an agency handling that particular make. It is not a job for green help at a service station.

Nobody is so good that he can be trusted to perform these two operations—lubrication and inspection—without the aid of a check sheet that lists all of the points to be covered. Without the systemization required by following the check sheet the best of mechanics will either develop shortcuts that omit important parts of the job, or will just plain forget.

Paper is the greatest aid in the world in eliminating these oversights. Check sheets are available for the lubrication of most makes of trucks, and similar inspection sheets can be made up with the help of the service personnel of the better truck agencies.

These may not be perfect as originally made up—it frequently happens that special conditions in a specific type of operation will call for variations, the need for which becomes clear as the result of months of experience.

> The forms reproduced with this article are presented as suggestions only. They were compiled by a fleet maintenance specialist after carefully studying the forms and procedures of a number of successful LPG vehicle maintenance systems. Due to the extreme variation in operating conditions and vehicles it is not expected that these forms will fit every operation without modification. We suggest that you use *these* forms, and any others that you think are good, as the basis on which to develop your own forms which will be tailor-made to fit your own operation.

All preventive maintenance systems include these periodic inspections, with certain routine operations to be performed in groups at stated intervals. For example, there will be a certain number of points to be inspected every time a lube job is performed. These will include the obvious matters such as water leaks from both radiator and engine, leaking oil seals and gaskets on the engine and gear units, checking the need for adjustment of clutch and brakes, inspection of tires for damage to tread and casings and for abnormal wear due to misalignment of axle, looking for broken spring leaves and worn bushings anywhere on the chassis, checking the condition of the battery, inspecting the electric wiring, lights, starter, generator, and all these points where defects might occur with the greatest frequency.

Some can go longer

Other units having greater life or requiring less frequent adjustment will be grouped together for attention at longer intervals. The general practice is to set the less frequent inspection groups at 5000, 10,000, 25,000, and 50,000 mile intervals. This may vary with the different operating conditions peculiar to the fleet locale and type of service.

Somewhere in this schedule is periodic tune-up of the engine, at which time the entire ignition system is gone over with instruments to determine the current condition, estimate the possibility of the various units lasting until the next tune-up, and replacing those which are defective or in doubt.

A similar check is made on the fuel system, and adjustments made in both systems, if needed, to bring the engine up to peak efficiency. This pays dividends in saving of fuel and time, in reduction of engine wear, and in the avoidance of breakdowns and inefficient operation. It is quite likely that the tune-up period should occur more frequently in bulk trucks than in highway transports, because of the higher "engine miles" due to extra operating in reduced gears and in pumping fuel.

The drivers reports and the reports of the inspectors, taken together, will indicate when major overhaul operations are needed on engines, gear units, front ends, and other major assemblies. These are specialized operations, and it is generally advantageous to have these performed in a shop that has the special tools and the experienced labor to turn out the best possible jobs. This may or may not be the shop where the routine lubrication and the periodic inspections and tune-ups are performed.

Contract maintenance

In an increasing number of truck agencies and independent garages contract maintenance service has been developed. This is built around the preventive maintenance idea, and it generally includes lubrication, inspection, and the recurring operations of adjustment and replacement which can be anticipated at routine intervals. Obviously, it cannot include repair of damage due to accidents. It may or may not include major overhauls of engines, gear units, etc., depending on the arrangements between the shop management and the customer.

Charges for this service are usually based on elapsed mileage, or on

a time factor related to average monthly or annual mileage. This arrangement is obviously not as convenient as doing the work in a company shop, or in a service station down in the next block. There is a time cost in connection with delivering the vehicles to the shop and returning them to the LPG plant. Offsetting this are the advantages of having the work performed by specialists, and by the saving in management time that would be required to supervise the work in a company operated shop. These advantages are worth considering.

It is worth noting in this connection that Reo and International, both of whom manufacture trucks with factory installed LPG-fuel systems, have developed contract maintenance systems which are available through their branches and agencies. Several of the other quantity producers of trucks likewise encourage their dealers to engage in contract maintenance. Some of the agencies will sell a chassis on a special time payment plan which includes maintenance for the life of the sales contract.

No matter where the preventive maintenance program is carried out, an individual record on each vehicle should be kept in the LPG dealer's office. On this sheet are entered, with the mileage, the various operations included in the program.

The costs also go on this sheet, segregated according to the accounts set up in the plan. Gallons and cost of fuel, quarts and cost of lubricating oil, tires, standard or contract cost of the preventive maintenance inspections, major repair items, routine replacements, tune-ups, accidents—all of these are necessary to control the maintenance program and to provide the information needed as a guide to the time of replacement and the selection of the new vehicle.

Leased trucks

A relatively new idea in connection with L. P. gas operation is the use of leased trucks. The trucks are owned and maintained by the leasing company, which carries the investment and all the necessary insurance. Numerous advantages to the LPG operator are pointed out in connection with this system. Some of these may prove to be theoretical, but it might be advantageous for any operator to examine them in the light of the conditions prevailing in his own business.

Growing companies are chronically short of capital on which to expand. The use of leased trucks releases the operator's capital to be used in financing the sales operation, where it will generally return a higher income than it would if tied up in rolling stock.

The leasing company can operate a large shop and employ skilled mechanics and supervision beyond the scope of the single LPG operating company. Such a shop can be equipped to do more of the fleet work than would be advisable in the single LPG dealer's shop. The work

DRIVER'S DAILY INSPECTION PROCEDURE

Bulk Trucks

Sitting at wheel, engine running, check the following:

All panel instruments	High-low beam switch
Brake application	Rear Vision mirrors
Brake release	Windshield wiper
Hand brake	Horn

Starting at left front wheel, engine running, check:

Wheels and tires	Lights - head
	clearance
Wheel lugs	tail and stop
Tire chains	Hoses
Cabinet doors	Fire extinguishers
LPG Valves	Cab doors

Preliminary Driving Test	Ready for road?
Clutch	Fuel supply
Gearshift	Engine oil
Brakes (test stop)	Radiator
Engine OK?	Battery

The driver should be given a standard procedure for determining before he leaves the yard that his vehicle is in condition to do its day's work safely.

DRIVER'S DAILY TRIP SHEET

Truck No_____ Date _____ Route _____

Inv. No.	Customer's Name	Gals.	Amt.Cash		Amt.Charge	

Driver's Report on Vehicle

Speedo IN _____ Gals Gas ___ Meter IN _____
Speedo OUT _____ Qts Oil ___ Meter OUT _____
Miles today _____ Tire Exp ___ Gals Del _____
The following items need mechanical attention _____

1st Copy, Accounting
2nd Copy, Shop
3rd Copy, Driver Signed _____

By using carbon copies the driver gives, on a single form, the information needed for customer accounting, control of maintenance system, and cost accounting on vehicles.

flow can be arranged more advantageously in a pool operation of a number of fleets.

Proper driving

In any preventive maintenance program, whether handled on a company owned or a leased basis, one of the important factors is proper driving. The driver who eases his truck into the load, and who watches his crossings and obstructions so as to avoid sudden stops, will show a lower operating cost on that vehicle than will another driver who has never been able to get the hot-rod instinct out of his system.

Good driving may be encouraged in a number of ways. First, the manager must make it clear that he expects careful and safe driving at all times. He should know enough about his employe's driving habits to be sure that his instructions are being carried out. This can only be determined by checking on the man's driving when he does not know he is under observation.

A driver may be a better truck jockey than his boss—it happens quite frequently. It should be a part of the duties of the best driver available for that kind of work to train each new company driver in the handling of the vehicle that he will pilot.

And the pressure for good driving should never be released. Some managements consider maintenance cost of the employe's assigned vehicle as a factor in determining a bonus at the end of the year. It should be emphasized that this is only successful on a long term basis. It has seldom worked satisfactorily on a monthly bonus basis, as some employes will overlook reporting defects that need correction to get a higher reward at the end of the month. On an annual bonus basis the employe is much more inclined to consider the possible results of allowing a defect to continue, and will therefore be more conscientious in making his daily report.

There is no one maintenance setup that is applicable to all LPG operations. Individual and local conditions need to be studied to determine the details of the program for any specific case. But it has definitely been established by organizations whose business is the operation of trucks that vehicle operating costs are less, and the vehicles are available for service more days per year, if the maintenance program is organized so troubles are taken care of before they happen, instead of waiting for them to become big, and then having to do a big job of fixing. ■

LUBRICATION AND INSPECTION SCHEDULE

EVERY 1000 MILES

Mechanic will keep eyes open for any visible mechanical defects such as loose bolts, broken springs, broken or damaged units anywhere on the truck while performing lubrication.	Check tires for abnormal wear, cupping, cuts or bruises.
	Check radiator for leaks, condition of water, anti-freeze.
Lube all grease fittings.	Check fan belt for wear and adjustment.
Lube all oil points except gen.	Check engine for oil and water leaks.
Check transmission oil level.	Check battery for water level & charge.
Check differential oil level.	Check fluid level, master brake cyl.
Clean and refill air filter.	Check brake booster or air brake cyls.
Check level & condition, CC oil.	Check brake tubes and shields for leaks.
Check air compressor oil level.	Check cargo tank plumbing for leaks.
Do not lubricate brake cams.	Check engine fuel system for leaks.
Drain brake air tank, if any.	

EVERY 5000 MILES

In addition to all 1000 mile lubrication and inspection operations add these:

Repack all wheel bearings.	Check brake linings.
Oil generator bearings.	Check play in steering mechanism.
Lube brake operating cams (if any)	Check play in axle pinion.
Clean and oil breathers on CC,	Check all cargo tank holddown bolts.
differential, transmission.	Check generator output

EVERY 10,000 MILES

In addition to all 1000 and 5000 mile operations add these:

Drain and refill Diff. & Trans.	Complete engine tune-up.
Change oil filter.	Inspect LPG regulator hoses.

SEASONAL

Drain, flush, refill radiator.	Inspect cab heater.

Preventive maintenance can only be accomplished on a systematic basis. The work must be planned for the correct intervals, preferably in conjunction with the lubrication program. Similar inspection sheets as the one shown can be made up with the help of the service personnel of the better truck agencies.

SHOP ORDER

Vehicle No.____ Date _____ Speedometer _____

Reason for work: Driver report ___Inspector report ___
Service call Elapsed miles

Work Needed

Lube & Insp: 1000_____ 5000 ____ 10000____ Seas._____

Tune-up _____

Repair items	Time	Mech.	Parts cost

SUBLET REPAIRS

Item _____ Sent to _____

Item _____ Sent to _____

Accepted _____
Driver

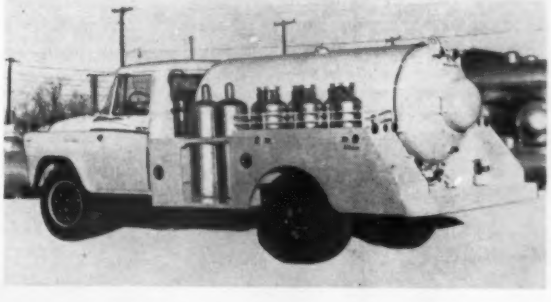
Written orders are needed to carry out systematic maintenance work, permit accurate cost accounting and fix responsibility for satisfactory condition of vehicle.

HOW TO CUT DELIVERY COSTS *. . . by saving on cylinder delivery*

Photo roundup of cylinder and service units

To save time in delivering cylinders to house trailers and industrial gas users, this custom-built body (right) was designed by Acme Butane & Appliances, Fresno, Calif. Cylinders or appliances can be carried in the pick-up body. Crane is for loading tanks up to 250 gal.

No running back to the shop for tools, fittings, or parts with the truck shown below. Everything is in compact bins outside of the pick-up body. It's used by the service and installation department of Valley Butane Co., Fresno, Calif.



Four 100 lb cylinders, six 20 lb cylinders, and up to 900 gal. of bulk gas can all be carried in the combination bulk and bottle truck shown above. Designed especially for house trailer delivery, its manufacturers call it the "Time Saver."

One trip can service many fleets of propane-powered fork lift trucks when using the truck on the left. It saves time and money for Skokie Valley Hicksgas Inc., Skokie, Ill.

HOW TO CUT DELIVERY COSTS

. . . by cutting pumping time

You can pump faster at less cost

By LAWRENCE W. SMITH, M. E., President
Smith Precision Products Co.

THIS article is for the benefit of delivery truck owners. Our purpose is to show how it is often possible to make small changes in the L. P. gas pump discharge line that will allow a considerable speed-up in the delivery rate. We also want to show how to design *new* delivery truck piping for very fastest pumping, since this type of efficiency is becoming increasingly important to the profit picture.

Most of the comments in the discussion can, in addition, be used to good advantage by owners of stationary dispensing systems having liquid meters, such as are often placed at roadside for filling fuel tanks on trucks and other motor vehicles.

Since the first version of this article was published in BUTANE-PROPANE *News* (January, 1953), an important number of major improvements in L. P. gas delivery systems have been developed. This revision includes many of these. The several tables that are presented, giving the pressure drop (resistance-to-flow) across various unit parts in pump discharge lines, have been revised and enlarged where necessary. We will explain the significance of these tables and we will show by examples how their figures can be used for estimating delivery rates from trucks, or stationary dispensing systems.

Here's how to speed up fuel deliveries by making small changes in the pump discharge line. The first version of this article appeared in the January, 1953, issue of BPN. Since that time, an important number of major improvements in LPG delivery systems have been developed. Mr. Smith, one of the nation's top authorities on LPG pumping, has therefore revised and expanded his original article.

Two points should be made very clear at the start. First, this article deals with units in pump *discharge* lines only. The items in pump inlet lines are also very important and have been discussed in other articles. To gain greatest benefit from suggestions herein, we must be sure pumps are properly supplied with liquid at all times, through well-designed inlet lines. We assume that this will be taken care of.

Second, a few important parts of this article are based on *theory* only, and since everyone who has ever had much to do with handling L. P. gas knows that *theory* and *actual practice* may not show exactly the same results, we deem it important to designate such theoretical sections. A single asterisk (*) will indicate the beginning of a theoretical part; a double asterisk (**) will indicate its conclusion. In the author's present opinion, any information herein based on theory will be very close to actual experience.

There are seven parts or units in pump discharge lines that affect delivery rates. These are all illustrated in the accompanying *Fig. A*,

FIGURE A

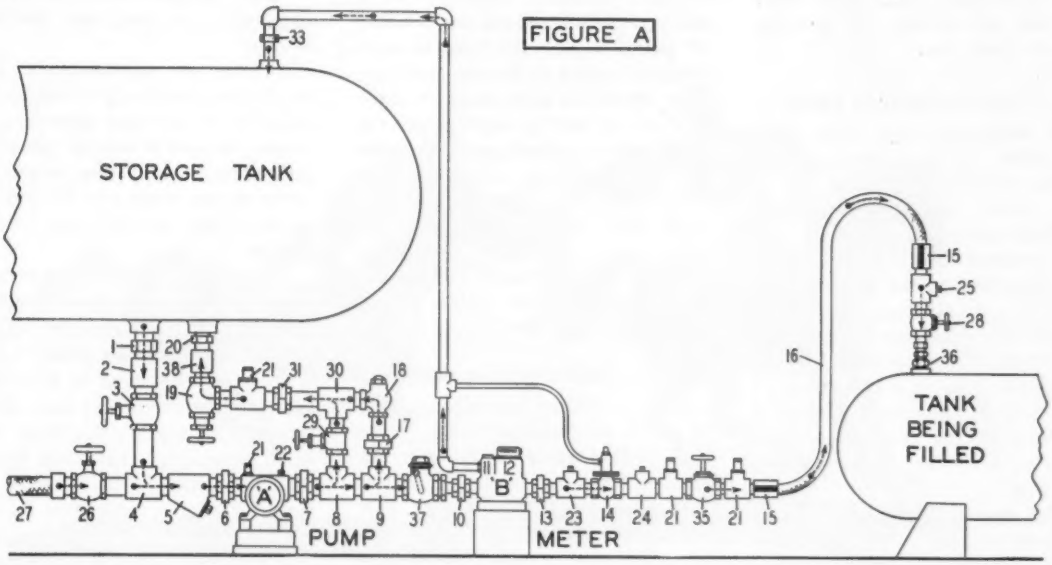


Figure A shows a basic LPG pumping system designed for delivery trucks and also stationary plants where fuel tanks on motor vehicles, cylinders, trailer tanks, and the like are filled. This system may look somewhat complicated, but it is not costly and there is a very good safety or convenience reason for every item shown. It has been designed in accordance with the recommendations of the new ASME-API Code for "Installation, Proving, and Operation of Positive Displacement Liquid Meters in Liquid Hydrocarbon Service," and also takes advantage of the engineering principles important to pump installation, to assure longest pump life and fastest delivery. It is assumed that the thermometer well and vapor-eliminator check valve recommended by the meter code are built into the meter. When meters not having this desirable equipment are installed, these parts may be added as separate installation features.

Arrows indicate the direction of fluid flow, as follows:

To fill tanks: Liquid flows out of storage tank through excess-flow valve 1, coupling 2, shut-off valve 3, tee 4, strainer 5, union 6, and into pump "A". Pump develops the necessary delivery pressure and pushes liquid into tank to be filled through union 7, tee 8, tee 9, check valve 37, union 10, meter strainer 11, meter 12, union 13, tee 23, back-pressure valve 14, tee 24, tee 21, shut-off valve 35, tee 21, hose couplings 15, hose 16, tee 25, shut-off valve 28, and filler valve 36. Shut-off valves 26 and 29 are left closed. Valves 3 and 26 are preferably plug or gate types with low resistance-to-flow. All other shut-off valves can be globe or angle types if desired.

Bypass valve: If pump builds up an excessive pressure, bypass valve 18 opens, allowing enough of the liquid pumped to return to the storage tank to relieve pump strain. This bypassed liquid comes out of tee 9 and runs through union 17, bypass valve 18, tee 30, union 31, tee 21, shut-off valve 19, coupling 38, and excess-flow valve 20 to storage tank.

To fill storage tank from transport truck or RR tank car: Connect liquid hose 27 and vapor return line (not shown). Liquid flows through hose 27, shut-off valve 26, tee 4, strainer 5, and union 6, to pump "A". Pump fills storage tank by pushing liquid through union 7, tee 8, opened shut-off valve 29, tee 30, union 31, tee 21, shut-off valve 19, coupling 38, and excess-flow valve 20. Shut-off valves 3 and 35 are left closed.

For best operation with a Smith pump, bypass valve 18 is set at about 75 pounds. For proper settings with other makes of pumps, consult the manufacturer. Fittings at positions marked 21 (4 pieces) are pop-off relief valves placed to relieve any hydrostatic pressure that might build up between closed shut-off valves when the system is not in use. Place ¼" pipe plugs at points 22, 23, 24, and 25. These are test places for inserting pressure gages which will help greatly in trouble-shooting if difficulties develop in the system after it has seen considerable service. See pages 98, 100, and 104 in "Butane-Propane News," September, 1951, for further details on this testing, or write for reprints of the article to Smith Precision Products Co.

Many modifications to this installation can be made to suit service conditions. The drawing is as complete as possible, but does not show everything that could be desired by all users. The storage tank is of the horizontal type, but spherical or vertical tanks are just as satisfactory if mounted as high above pump level. The meter outline is purely schematic, and is not intended to resemble any particular make. This layout should work very well with any type of pump or meter.

and may be listed as follows:

Unit 1. Meter (12 in Fig. A).
Unit 2. Back pressure valve (14 in Fig. A).
Unit 3. Valve on meter end of delivery hose, if used (35 in Fig. A).
Unit 4. Delivery hose (16 in Fig. A).
Unit 5. Valve on delivery end of hose (28 in Fig. A).
Unit 6. Tank filler valve (36 in Fig. A).
Unit 7. Back pressure built up in tank being filled when equalizing (vapor return) line is not used.

Other items in the pump discharge line, such as the short lengths of piping, check valves, elbows, tees, and miscellaneous fittings, can be neglected in the usual system, as their effect on delivery rates is small in comparison with the units listed above.

Let us take up the seven units one by one, in the discussion to follow.

Unit 1—The meter

Table 1 shows resistance-to-flow of average meters available for L. P. gas service. These figures apply only when the meter strainer is clean. If this strainer becomes clogged with tank scale or other foreign matter, the resistance-to-flow (pressure drop) will be much

higher, and this will slow deliveries. Therefore, check your meter strainers periodically to be sure they are kept clean.

Unit 2—Back-pressure valve

The diaphragm-type back pressure valve, which is designed for straight-through flow and has a large, round cap to accommodate the diaphragm, has now come into very general use. Most meters manufactured in the past several years have this included as part of the metering "package." The resistance-to-flow (pressure-drop) of a diaphragm-type back pressure valve is practically zero,[1] and so it may be neglected in common types of L. P. gas delivery systems shown in *Fig. A*.

Older meters still in service usually have spring-loaded back pressure valves, which often look like an angle-type check valve attached to the meter outlet. The resistance-to-flow (pressure drop) of an old style back pressure valve is equal to its setting, which in a few cases may be 50 psi or higher. Most valves of this type that have come as part of a meter "package" were originally factory-set to about 15 psi.

Unit 3—Valve on meter end of delivery hose

Table 3 shows resistance-to-flow of average globe valves in L. P. gas service. When these valves are properly sized, taking into consideration the desired delivery rate, the amount of pressure absorbed is small. In view of this, we recommend for maximum efficiency, in most cases, at least the ¾-in. size with 5 to 30 gpm meters, at least the 1¼-in. size with 12 to 60 gpm meters, and at least the 1½-in. size with 20 to 100 gpm meters. Smaller sizes should be used only when full meter capacity is not expected.

Note, *Table 3* applies only to *globe* valves. Angle-type valves are better; new type ball or gate valves, or other types having straight-through flow, are the finest as they have practically zero pressure drop.

[1] In most delivery systems this type back pressure valve remains wide open during all of the delivery. The pressure drop of other equipment downstream will total more than the pressure setting of the valve, and the valve is designed to open wide whenever the extra pressure in the discharge line exceeds its setting.

In some cases, there is no valve in this position, although it is strongly recommended as a shut-off point in case the hose is accidentally ripped or broken, particularly where the back pressure valve is of the old spring-loaded type. (A diaphragm type back pressure valve in good condition is always shut tight unless the pump is running.) Note how the pressure drop of globe valves increases quickly as delivery rates increase. This is also true of most other units in the pump discharge line.

Unit 4—Delivery hose

Table 4 shows resistance-to-flow of L. P. gas delivery hose. Note that 50-ft lengths of hose in the smaller sizes have very considerable pressure drop at higher flow rates. For example, a 50-ft length of ½-in. hose carrying as little as 15 gpm, still develops a pressure drop of 64.6 psi, making this size *very poor* for fast delivery. Also, ¾-in. hose has a high pressure drop at delivery rates in excess of 30 gpm, etc. The use of what may at first thought seem to be too large sizes of hose may be indicated.

A hose of unnecessarily long length also needlessly penalizes the operator by slowing delivery. Of course, be sure it is long enough to conveniently reach the large majority of the tanks you fill, but not so long that several coils usually stay on the truck.

If you deliver to just a few tanks that require a long hose length, it may be best to have the regular hose on the hose reel short, but to carry a second length of hose with quick-coupling adapters that can be attached to the regular hose only when necessary. This will assure that the speed of delivery to the majority of the tanks you fill will not be penalized.

For pressure drop of hose lengths other than 50 ft, multiply figures in *Table 4* by the following factors:

Table numbers correspond to Unit numbers, therefore there are no tables numbered 2 and 5.

TABLE 1. RESISTANCE-TO-FLOW OF AVERAGE METERS AVAILABLE FOR L. P. GAS SERVICE

Delivery Rate GPM	Meter Pressure Drop, psi 1¼" Size (5 to 30 GPM)	1½" Size (12 to 60 GPM)	2" Size (20 to 100 GPM)
5	0.3	Don't use	Don't use
10	0.5	Don't use	Don't use
15	0.9	0.8	Don't use
20	1.4	1.1	0.3
25	2.2	1.7	0.6
30	3.1	2.4	0.8
40	Don't use	4.1	1.2
50	Don't use	6.3	1.8
60	Don't use	9.0	2.6
70	Don't use	Don't use	3.7
80	Don't use	Don't use	4.9
90	Don't use	Don't use	6.3
100	Don't use	Don't use	7.8

TABLE 3. RESISTANCE-TO-FLOW OF AVERAGE GLOBE VALVES IN L. P. GAS SERVICE

Delivery Rate GPM	Pressure Drop, psi ½" Size	¾" Size	1" Size	1¼" Size	1½" Size	2" Size
5	-0-	-0-	-0-	-0-	-0-	-0-
10	1.6	-0-	-0-	-0-	-0-	-0-
15	3.6	1.1	-0-	-0-	-0-	-0-
20	6.4	2.0	1.2	-0-	-0-	-0-
25	10.0	3.0	1.9	-0-	-0-	-0-
30	14.4	4.5	2.8	1.0	-0-	-0-
40	25.6	8.0	4.4	1.9	-0-	-0-
50	40.0	12.0	6.7	2.9	1.0	-0-
60	57.6	16.0	9.6	4.0	1.5	-0-
70	Too high	21.0	13.0	5.2	2.0	1.0
80	Too high	28.0	16.5	6.7	2.5	1.3
90	Too high	35.0	21.0	8.3	3.2	1.6
100	Too high	47.0	25.0	10.1	4.0	2.0

...the long run

It can pay you well in the long run to do business with the Sid Richardson Gasoline Co. By giving you on-time delivery of top quality products, adjusting prices voluntarily to meet competitive conditions, and rendering unexcelled co-operation, we help our regular customers protect and increase their profits.

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TABLE 4. RESISTANCE-TO-FLOW OF 50 FT LENGTHS OF L. P. GAS DELIVERY HOSE OF VARIOUS SIZES AND AT VARIOUS DELIVERY RATES[2]

Delivery Rate GPM	Pressure Drop, psi ½" Size	¾" Size	1" Size	1¼" Size	1½" Size	2" Size
5	8.1	1.1	0.2	0.1	-0-	-0-
10	30.0	4.0	0.9	0.3	0.1	-0-
15	64.6	8.5	2.0	0.7	0.3	-0-
20	Too high	14.4	3.4	1.0	0.5	0.1
25	Too high	22.1	5.2	1.7	0.7	0.2
30	Too high	31.0	7.4	2.4	0.9	0.3
40	Too high	54.0	12.6	4.2	1.6	0.4
50	Too high	Too high	19.0	6.4	2.5	0.6
60	Too high	Too high	26.4	9.0	3.5	0.8
70	Too high	Too high	35.4	11.9	4.6	1.1
80	Too high	Too high	46.2	15.5	5.9	1.4
90	Too high	Too high	56.6	19.0	7.4	1.7
100	Too high	Too high	69.7	23.4	8.9	2.1

[2] This table was calculated from viscosity figures of propane and butane at 60° F temperature, as given in *Table 9* on page 34 of *Handbook Butane-Propane Gases, Third Edition*. The procedure followed in the calculations is as outlined on pages 211 and 212 of Daugherty's *Hydraulics, Fourth Edition*. *The resistance of hose is assumed to be *the same* as that of clean steel pipe of equivalent *inside diameter*.** This assumption is in accordance with the viewpoint of a hose manufacturer's representative known to be conservative.

TABLE 6. RESISTANCE-TO-FLOW OF TANK FILLER VALVES OF VARIOUS SIZES, AT VARIOUS FLOW RATES

Delivery Rate GPM	Pressure Drop, psi Old-Style Filler Valves ¾" Size	1¼" Size	2" Size	New-Style Filler Valves ¾" Size	1¼" Size
5	2.9	0.4	0.1	1.0	0.1
10	9.2	2.0	0.3	2.5	0.3
15	20.0	2.8	0.6	5.6	0.6
20	35.0	4.5	0.9	10.0	1.1
25	54.7	6.8	1.5	15.6	1.7
30	Too high	10.0	2.2	22.5	2.5
40	Too high	17.8	3.9	40.0	4.4
50	Too high	27.8	6.1	62.5	6.9
60	Too high	32.4	8.8	Too high	10.0
70	Too high	44.1	12.0	Too high	13.6
80	Too high	57.6	15.6	Too high	17.8
90	Too high	Too high	19.8	Too high	22.2
100	Too high	Too high	24.5	Too high	27.8

10-ft hose 0.2
20-ft hose 0.4
30-ft hose 0.6
40-ft hose 0.8
60-ft hose 1.2
70-ft hose 1.4
80-ft hose 1.6
90-ft hose 1.8
100-ft hose 2.0
110-ft hose 2.2
120-ft hose 2.4
130-ft hose 2.6
140-ft hose 2.8
150-ft hose 3.0

Unit 5—Valve on delivery end of hose

Use the figures in *Table 3* for this valve as well as valve Unit 3. Here, also, the new-type ball and gate valves have practically zero pressure drop, so may be preferred.

If you consider installing such a valve on the end of the hose, remember that some are quick-acting types where ¼ turn of a lever opens or closes them. Be sure the lever can be positioned in such a way that the valve cannot be opened accidentally if the hose is dropped on the ground. Otherwise, a lever-handled valve may not be safe.

Unit 6—Tank filler valve

The figures in *Table 6* are representative of various makes and models but are not 100 per cent correct for any. Thus, they must be used only as a guide, but they are accurate enough for most purposes. An attempt has been made to show figures for old style filler valves, such as are in service on tanks manufactured up to several years ago, and for new style filler valves which have been made more recently and are listed in current catalogs. These have many improvements, including less pressure drop, and may or may not be adapted for the so-called "vapor space filling."

Note how the old style ¾-in. filler valves have much more pressure drop than the others. These valves should never be used in any but the smallest tanks, as their greater resistance results in much time loss when deliveries of 50 or more gallons are made. It is almost impossible to force as much as 20 gpm through an old style ¾-in. filler valve, while the larger sizes of old style valves, or new style valves of ¾-in. or 1¼-in. sizes, handle considerably greater delivery rates with ease. ■

Part two of this article will be presented in October.

California dept. prohibits plastic piping and tubing

Applications for permission to use plastic piping and tubing for L. P. gas installations have been denied by the California Department of Industrial Safety. The department gives the following reasons:

"1. There have been no specific standards established for plastics.

2. The sample submitted was found to lose strength very rapidly at slightly elevated temperatures.

3. We have had some experience with plastic piping in water service and find that gophers and other rodents appear to enjoy the flavor of this product and, therefore, it would not appear suitable for L. P. gas service."

Who Are Our Competitors?

Our competitors do more for us than our friends.

Our friends are too polite to point out our weaknesses, but our competitors go to great expense to tell of them.

Our competitors are efficient, diligent and attentive. They make us search for ways to improve our products and our services.

Our competitors would take our business from us if they could. This keeps us alert to hold onto what we have. If we had no competitors, we might become incompetent, inattentive, and possibly lazy.

We salute our competitors; they have been good to us.

We need the discipline they enforce upon us.

God bless them all.

ANONYMOUS

American business and industry lost 235-million man-days in 1955 due to accidents, according to the National Safety Council.

Traffic accidents caused 38,300 deaths during 1955. This was an 8 per cent increase over 1954, according to the National Safety Council.

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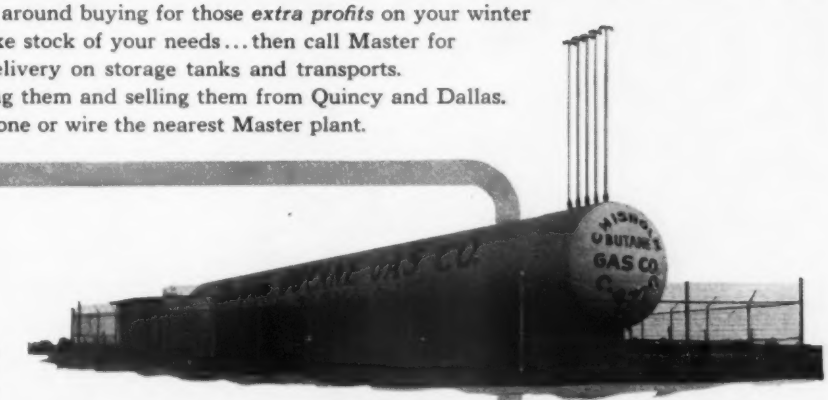

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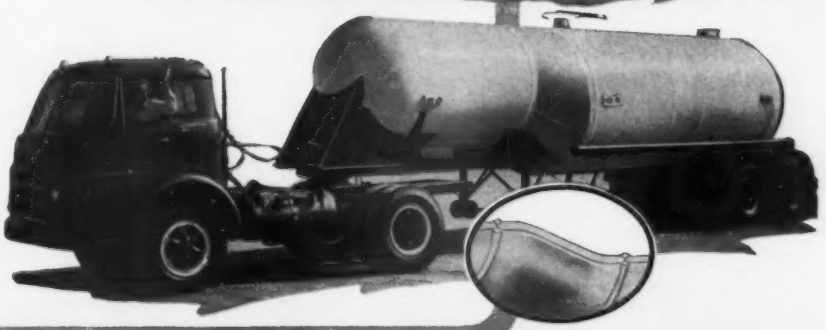

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Gas conversion burner with boiler formerly operated with coal. The burners also are used to replace oil burners, and to succeed either coal or oil in warm air furnaces.

A conversion burner might be the answer

SINCE the end of World War II approximately two and a half million American families have gained the advantages of gas central heating without buying new central heating plants. They have done this by installing gas conversion burners in furnaces or boilers previously operated on solid or liquid fuel.

Why such favor for gas conversion burners? And when does it pay to obtain one?

The answers, says the Gas Appliance Manufacturers Association, lie in the wide benefits of gas as a fuel for central heating plus the fact that the modern conversion burner can provide these at strikingly low initial cost, in many cases where the old plant is in good condition.

Of course, installation is a professional job, calling for the skills of a heating dealer or L. P. gas expert. But, notes GAMA, it is a task often accomplished in a day or two, and sometimes even in the dead of winter, without the householder's going cold at all.

Nor does it take the expert much time to examine the old furnace boiler, determine whether it's worth converting, and give an accurate, reliable comparison as to how costs would compare with an all-new heating plant.

Upon converting, the householder enjoys the cleanliness and silence of gas operation, and the space-saving benefits coming from the fact that no fuel storage in the home is required.

Reliable automatic controls operating the heating plant with the conversion burner are an important factor for economy as well as convenience.

Thus the householder, while retaining a furnace or boiler that has the appearance of an older model, actually has gained a heating plant with some of the finest ultra-modern features.

The change-over includes removing some features of the old system, such as oil burner or coal grates, providing the necessary gas connections for the new gas burner, and wiring it for automatic, thermostat-controlled operation.

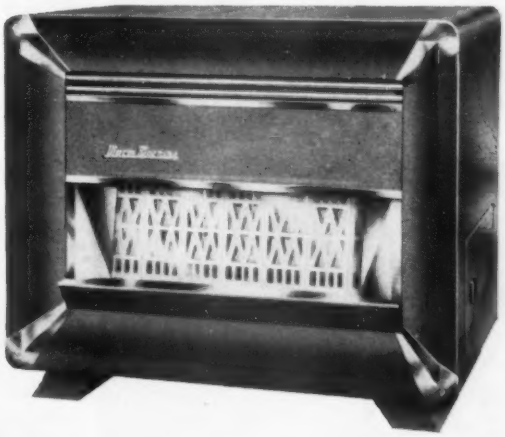
Frequently the change-over will include removal of hot water coils from the old heating plant and installation of a new separate automatic gas water heater. This also can be a major step for economy and efficiency.

In many cases fuel operating economies permit home owners to recover this investment quite rapidly, GAMA reports. Additionally, in many instances those using gas for heating obtain lower rates for the other household uses of the fuel, including cooking, water heating, refrigeration, clothes drying and incineration.

Low maintenance costs are important, too. The very nature of gas equipment makes it outstanding in this aspect, and the conversion burner is no exception. Many gas companies provide service on burners at nominal charge, GAMA notes, and the prospective buyer can check in advance on this point if he wishes to do so.

And so, urges GAMA, be sure that in making comparisons the entire subject of household fuel operating cost is considered. ■

Sales and profits go up when you show **Warm Morning Gas Heaters** to your customers. One look at these feature-packed, beautifully styled gas heaters and they buy ! Proof? In **1957** **Warm Morning Sales** increased 100%, and 1958 sales are still climbing! Big profits can be yours with AMERICA'S most beautiful gas heaters!



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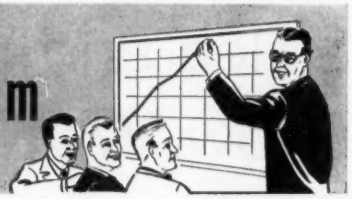


PART 13

How to sell gas clothes dryers

By CARL ABELL · Editor

THE average housewife who dries her clothes on a line lifts and carries almost two tons of weight per year from the washer to the line. Half of this weight is water. In taking in the wash, she carries another ton of weight back into the house. This requires an average of 45 miles of walking.

All of this is based on good weather. It says nothing about the numerous hurried trips to the line to take the clothes in so they can escape sudden showers, and the trip back to re-hang them when the rain is over. And of course it ignores the inconvenience that she and the family must go through in setting up emergency drying equipment indoors during long periods of bad weather, and living in the steamy rooms until the wash is dry.

And in colder climates there are the extra problems and work that arise when the wet laundry freezes on the line. That's another time when the housewife has to go through all the extra work and inconvenience of drying at least part of the wash indoors.

For the benefit of anyone who is inclined to minimize the hard work that the little woman goes through in drying that wash on the line, let's enter a bit of expert testimony. In an article published in the December 15, 1957 issue of *Modern Medicine*, Dr. Edward E. Gordon reported on the amount of energy consumed in doing a great many specific tasks. According to the good doctor, hanging clothes on the line is harder work than laying bricks. Here is his record: Hanging clothes on the line consumes 4.5 calories per minute. Laying bricks requires only 4 calories per minute. Even ironing is harder work than laying bricks, with an energy consumption of 4.2.

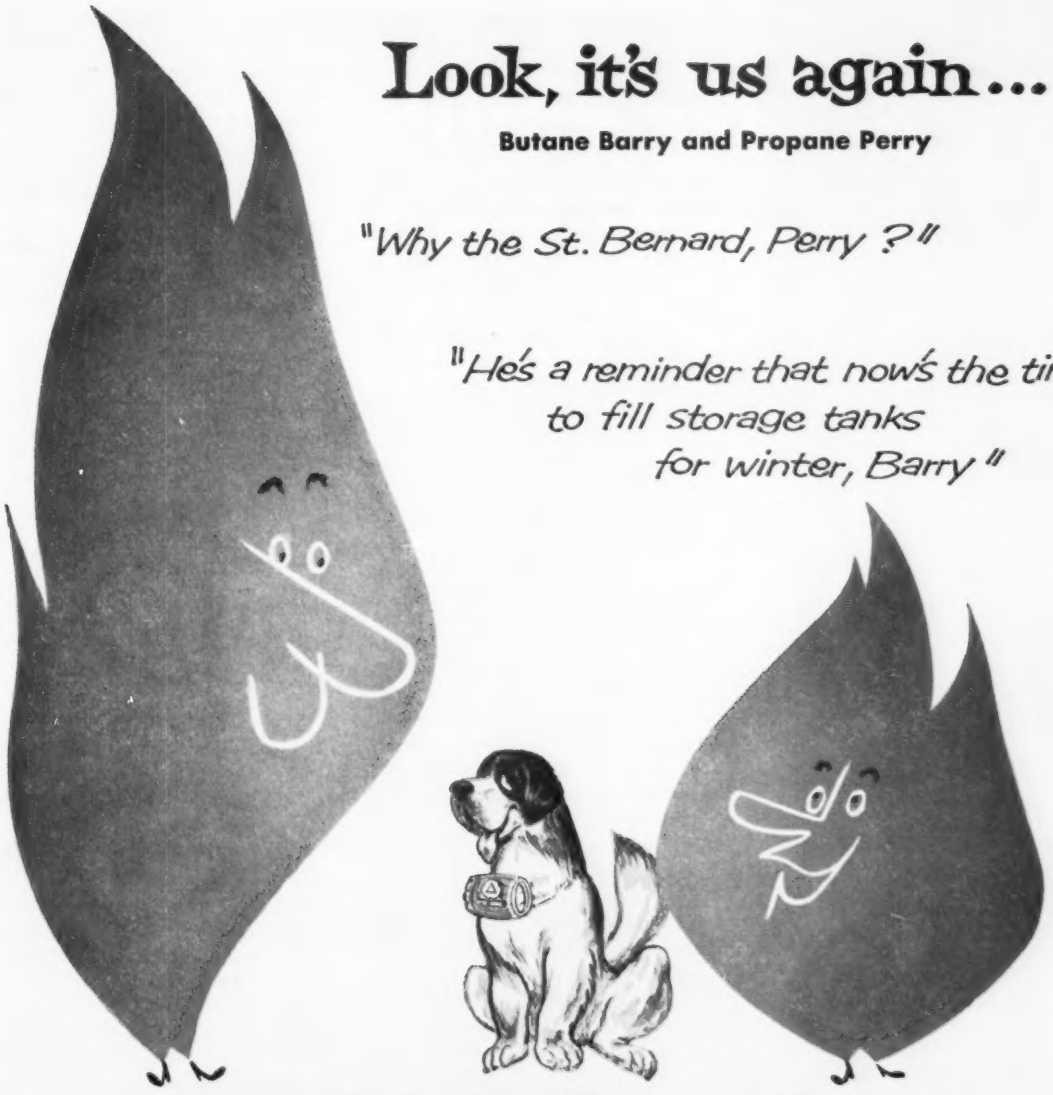
Here's a real contrast in clothes drying—the new on the left, the old on the right.

Look, it's us again...

Butane Barry and Propane Perry

"Why the St. Bernard, Perry ?"

"He's a reminder that now's the time to fill storage tanks for winter, Barry"



Yes, now's the time to fill your storage tanks with Cities Service LP-Gas!

Because by storing up early with Cities Service LP-Gas, you'll have the jump on winter.

Because Cities Service gives you a quality advantage your customers will appreciate . . . *quality exceeding NGAA specifications!* Cities Service LP-Gas is made in the most modern producing plants and strictly controlled during production, storage, and transportation.

Because Cities Service gives you the over-all operational aid that quickly empties your storage tanks and fills those of your customers, old and new.

Because when you receive your order by one of the many Cities Service railroad cars or huge trucks, you'll realize that here's a supplier you can depend on . . . all winter long!

Because Cities Service cooperates, never competes with its distributors. Operates no retail outlets!

For a winter that tops any you've ever had, talk with a representative from our nearest office below.

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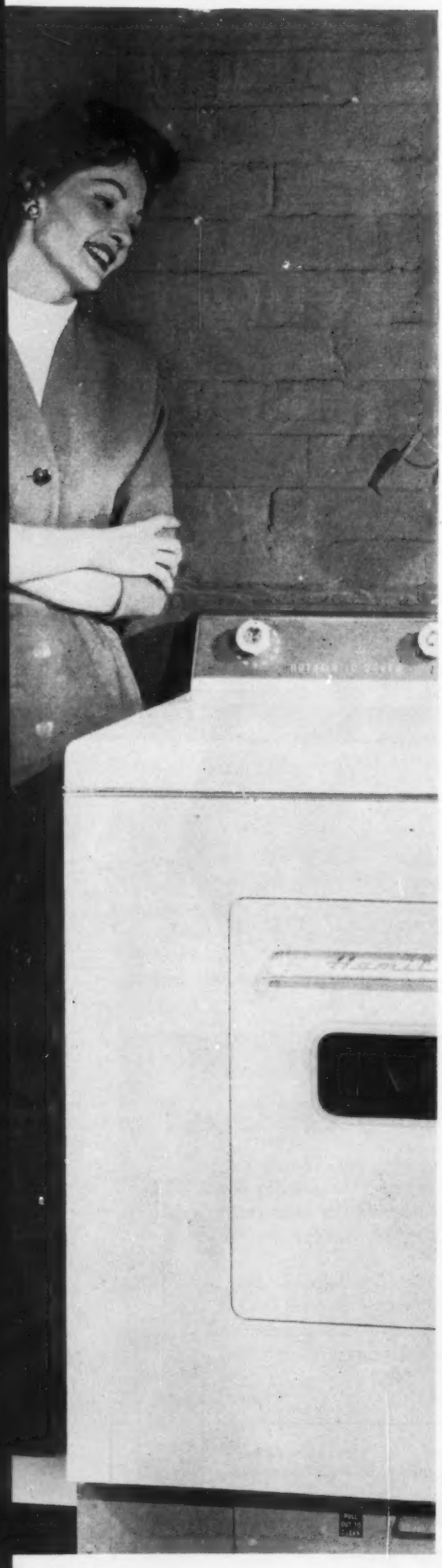

Washing clothes by hand is listed at 4.4.

Almost everyone needs a dryer

We point out all these details to show an odd circumstance—washing clothes is now almost universally mechanized, and in a rapidly increasing number of cases it is done with automatic washers. The housewife simply puts the clothes and detergent in the machine, turns a switch, and does something else while the machine does the complete job of washing, rinsing, and spin drying.

She comes back after all this work has been completed, and makes the necessary arrangements for drying. Unless she has an automatic dryer, the hardest part of the laundry work begins. Machines to reduce the work of washing the clothes have been with us for more than half a century. Commercial laundries have used equipment for indoor drying with heat for at least 50 years. Dryers for domestic use are comparatively new, and in comparison with the potential market their saturation is still very low.

We present the following for your thoughtful consideration: Almost every home in your community is equipped with a range, water heater, heating system, refrigerator, and washing machine. The one most needed appliance that 90 per cent of these homes still lack is the automatic dryer. Why isn't a dryer just as necessary as a washer? What other appliance offers as great a sales potential as the dryer? What other appliance offers such an opportunity for "clean" sales without trade-ins? Where else can you pick up a more desirable, steady year-around gas load? What's holding you back?

Dryers must be sold

Is it the idea that sunshine is free, but it costs money to operate a dryer? That is all very true, but—. Walking is less expensive than driving your own automobile, but now that everyone knows the advantages of the automobile, who walks? Telephones cost money, but their advantages are so great that few homes and no business can now get along without them. Ice boxes will still keep milk cool, but the advantages of automatic refrigeration have displaced the ice box almost everywhere. Hand cranked washing machines are still in existence, and they will still do a good job, but almost every housekeeper has given that laborious method up and put in a washer that is driven by mechanical power.

And the majority of housewives—more than 90 per cent—still dry their clothes the hard way, in spite of the fact that the automatic dryer is available everywhere, and it is one of the greatest wife-savers that has ever been developed. In seeking a reason for this we can come to only one conclusion—clothes dryers have not been bought for the majority of homes because the people do not yet know their advantages. Why don't they know? Because they have not been told and shown enough times and with enough sincerity and enthusiasm by enough salesmen.

Voice of experience

"The above," says you, "is the preaching of a man who sits behind a desk, and has never tried to sell a dryer."

Granted, but the man behind the desk gets those facts from a great many people who do know a great deal about selling clothes dryers. Perhaps you would like to hear it from a man who is right on the firing line. Here it is, from the mouth of a man who has had plenty of chance to learn the facts of life at first hand. His name is Charles Burnham. His job is Regional Sales Manager for Suburban Propane Gas Co. in Charlotte, North Carolina. This is a talk which Mr. Burnham gave before his own organization. Because he put his finger on so many of the important factors that have slowed down the sale of gas clothes dryers, we are giving you the whole bill of goods, including his introduction. Don't stop reading now—*this is the word.*

"I have been asked to present the facts on the importance of gas clothes dryers in our sales activities. As I see it, up to this time gas dryers haven't been of much importance. In order for me to be authoritative in my talk, I decided to look up our dryer sales and found that we had not only sold too few but the 'too few' we sold were

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largely ones bought by our employees and not sold by our sales force.

"What to do about it? Forget them? Conclude that dryers didn't sell last year, or the year before—and we tried—so they're hopeless today?

"If he hasn't made a dime out of dryer sales it might be natural for a salesman to conclude that stoves and water heaters are his bread-and-butter appliances. He might feel that he can only afford to spend his time on the appliances that are easier to sell—better known.

Electricity again

"This would be safe if there were only one good dryer—a gas dryer. However, Reddy Kilowatt also has a dryer—not as good a one, but saleable. And if we don't do something about it, we stand to lose customers and prospects to him by default! So let's take a look at Reddy Kilowatt's sales record to see if we have anything to worry about.

"First, we readily admit that electricity gives us stiff competition on the range and water heater sales—and we're concerned. We should be because:

"Electric range sales total nearly 1½ million a year—and many of these ranges take our customers and our prospects.

"Electric water heater sales run over 800,000—and again we lose both customers and prospects.

"But here's the shocker—did you know that the electric water heater is not their number two seller? No, the electric dryer takes second position with the sale of over 900,000 dryers. Yes, over 900,000 dryers. (The latest AGA report shows electric dryers outselling gas dryers by nearly 80 per cent. ED.)

"That figure represents a total equal to 62 per cent of their range sales. Or to put it another way, for every 10 ranges Reddy Kilowatt sells, he also sells 6.2 dryers.

Six thousand more gas dryers

"If our dryer sales were 62 per cent of our range sales, we would put out over 6000 more gas dryers each year.

"What would 6000 more gas dryers do for us?

"Increase the gas load about 204 lb per year for each of the dryer users. About 31 tank cars for our company.

"Provide about $300,000 additional gross appliance profit.

"Nail down 6000 customers and prospects.

"The last is the most important point, for if Reddy Kilowatt can steal our customers at that rate we soon won't have stove and water heater prospects to fall back on. The electric dryer is another means of getting that 220 volt line in the house, and when it comes in the gas appliances eventually go out the back door! When our customers decide to replace the clothesline, they do have a choice, and the pacesetters, the leaders whom others imitate, are going electric for lack of real selling on our part. Reddy Kilowatt is hard at work skimming the cream while we're asleep at the switch.

Yes, but

"It is usually easy to get agreement up to this point, but now the 'Yes, Buts' appear. Here are a few of the 'Yes, Buts':

" 'Yes, But,' No. 1. 'You just can't sell clothes dryers in our area because the sun shines too much.' If this be true, then probably electric dryers aren't selling either.

"Let's take a look at the records, as shown in the accompanying table.

"Maybe the sun doesn't have so much effect after all and maybe there is some hope for dryers in the East.

" 'Yes, But,' No. 2.

" 'I like to bleach my sheets on the line—they dry so nice and white.'

"True—the sun does bleach. But have you driven down a country road recently and looked at the clothes lines in the back yards? What do you see? Pink sheets, green sheets, candy striped sheets—and what is the sun doing to those colored sheets while it is bleaching the white sheets? The very same thing—and it's also bleaching the pretty print dresses, the sport shirts, the colored towels, the socks, the drapes and the slip covers.

"Is this not a reason for the use of a dryer rather than the clothes line?

" 'Yes, But' No. 3.

" 'I like the way the clothes smell when dried on the line.' Good, they do smell fine—in the clothes basket—but for how long? Have you checked on line-dried laundry a day—two days—three days after it is ironed and stored away?

"Anyway, deluxe dryers have ozone bulbs to produce the same effect.

"So is this a sound reason for the use of a clothesline? Doesn't seem so to me.

Price

" 'Yes, But' No. 4.

"Electric dryers are cheaper than gas dryers. Well, here's a copy of

GAS VS. ELECTRIC CLOTHES DRYER SALES (UNITS/STATE)

State	Gas	Electric
Sunny North Carolina*	62	6,550
Sunny Florida	449	10,170
Sunny California**	37,937	72,396
Sunny Texas	5,895	23,948
Louisiana	4,384	5,998
Virginia	330	9,014
Illinois	53,390	41,207

* Beaten 100 to 1 by the electric boys!
** With no rain from April to November

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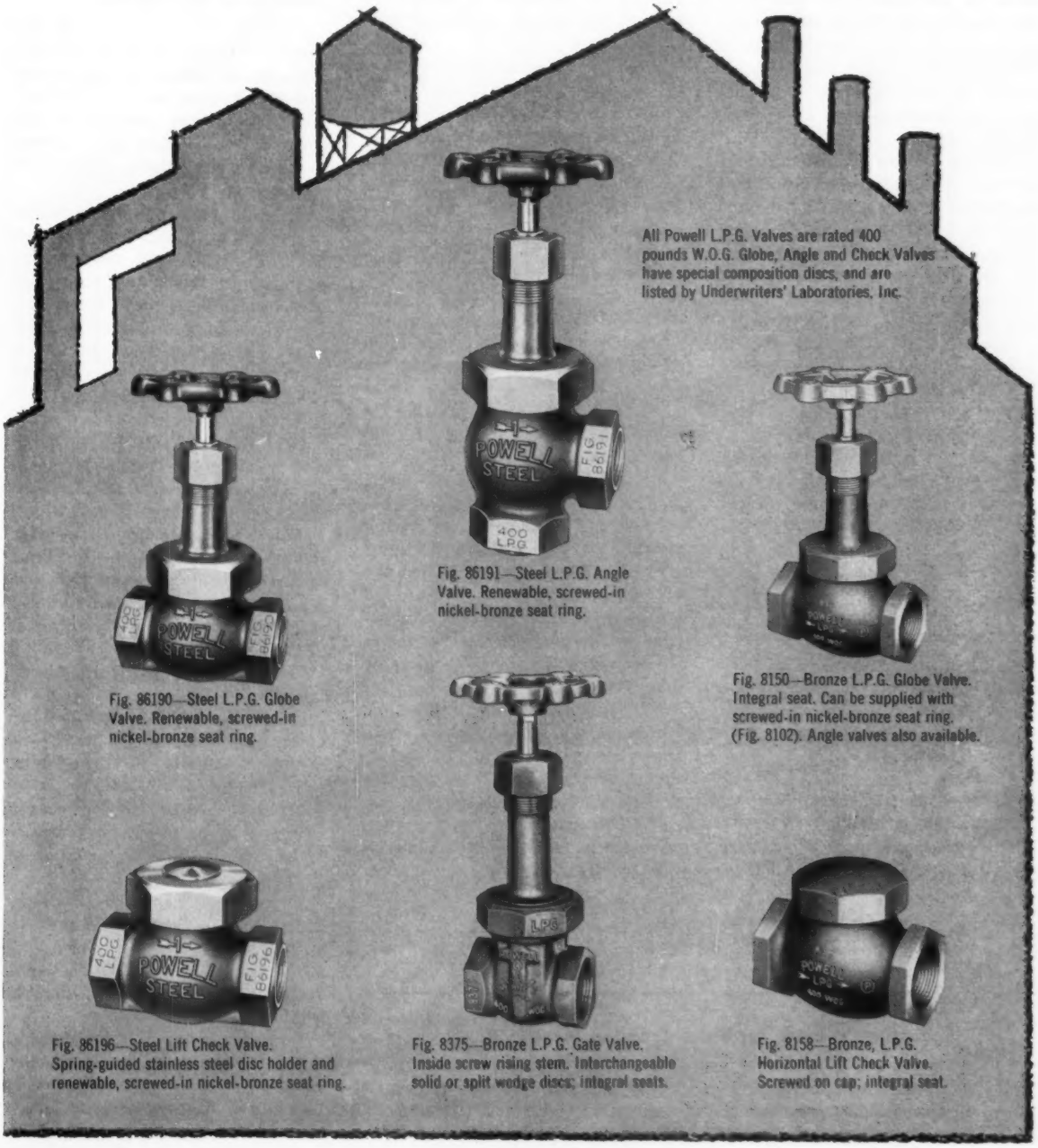
All Powell L.P.G. Valves are rated 400 pounds W.O.G. Globe, Angle and Check Valves have special composition discs, and are listed by Underwriters' Laboratories, Inc.
POWELL
STEEL
400 L.P.G.
FIG. 86191
Fig. 86191—Steel L.P.G. Angle Valve. Renewable, screwed-in nickel-bronze seat ring.
POWELL
STEEL
Fig. 86190—Steel L.P.G. Globe Valve. Renewable, screwed-in nickel-bronze seat ring.
Fig. 8150—Bronze L.P.G. Globe Valve. Integral seat. Can be supplied with screwed-in nickel-bronze seat ring. (Fig. 8102). Angle valves also available.
400 L.P.G.
POWELL
STEEL
FIG. 86196
Fig. 86196—Steel Lift Check Valve. Spring-guided stainless steel disc holder and renewable, screwed-in nickel-bronze seat ring.
LPG
Fig. 8375—Bronze L.P.G. Gate Valve. Inside screw rising stem. Interchangeable solid or split wedge discs; integral seats.
Fig. 8158—Bronze, L.P.G. Horizontal Lift Check Valve. Screwed on cap; integral seat.

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THE WM. POWELL COMPANY • *Dependable Valves Since 1846* • **Cincinnati 22, Ohio**

the July *Consumer Report* magazine. Twenty electric dryers and 14 gas dryers were tested. Do you know that 18 of the 20 approved electric dryers ranged in price from $219.95 to $307.95—but this is the unconnected price. You still have to add $25.00 to $60.00 to run the 220 volt BX cable from the service box to the dryer. And if 220 volt service isn't at the house, you're up over $100.00 additional cost for installation of an electric dryer.

"Where do we stand with our models? Our pilot ignition standard model is only $179.95—and the fully automatic electric ignition model is only $239.95—and these are installed—ready to use—prices. (Suburban Propane Gas Co. prices. ED.)

"So which dryer is cheaper to install—ours or the electric?

"Let's stop and identify these 'Yes, Buts.' They come from the prospect and they are parrotted by our salesmen. They indicate clearly that we aren't sufficiently acquainted with our product to convince the prospect. Because we don't fully know what we have to sell, we can't even convince ourselves.

Clothes drying facts

"So let us examine the facts about clothes drying. There are three basic principles of drying whether it is done on a line or in a dryer. They are:

"1. Heat.

"2. Movement of air.

"3. Tumbling action.

"Let's compare these points with regard to the Work Making Clothesline and the Work Saving Dryer.

"With a clothesline—where does your heat come from? The Sun. And where is the Sun? Ninety-three million miles away. We know it won't shine at night and we have no control over it during the day. Drying is therefore a matter of luck as far as your source of heat is concerned.

"Now, with the labor saving dryer, where does your heat come from? A scientifically designed burner controlled by a timer and a thermostat. Just the right amount of heat at just the right temperature for each fabric. You know that the job will be done and when it will be done to the very minute. And you know that it will be complete.

"Let's check on movement of air. With a clothesline it comes from the wind and the breeze. Can you control the wind? No movement gives slow drying if at all. Or sometimes violent movement, and the clothesline breaks making it necessary to do the wash over. Again it is a matter of luck.

"Now with the Labor Saving Dryer, you have complete designed control—a blower to move just the right amount of warm air through the clothes and exhaust the moisture to the outside. Again, you're sure with a dryer—no hoping or guesswork.

"Take a look at tumbling action. With a clothesline again it's from the wind causing the clothes to flutter or snap on the line. No control—a matter of luck.

"With our labor saving dryer you have gentle, measured, tumbling action with the clothes sliding from the fins of a smooth drum to float gently through the hot air—protected from the elements. No soot, dirt, pollen, dogs or birds, no whipping action, no freezing and no cracked fibers.

Down with clotheslines

"Did you ever stop to think of a very fine example of clothesline drying—an old flag? It is usually faded and worn and tattered and torn. And what gets it in this shape? Why, it has been exposed to all the advantages claimed for clothesline drying!

"At this point one almost begins to wonder if the clothesline has all the romantic charm that women claim for it. Remember, your prospect has already spent her money for a washing machine to save work, but when it comes to the other half of the job—drying, she tries to make you believe that this is what she likes to do:

"She tells you she just loves to load a basket of clothes from the washer—pick up that 25 lb basket and carry it out even in cold winter weather to the clothesline—bend, stretch, bend, stretch—to hang each cold, wet piece on the line. Backaches — frozen fingers — cracked hands—she really enjoys it all.

"Do you believe it? We live in an age when:

"1. Her automobile must have an automatic shift — no clutch—no moving that little shift lever 4 in. up or down.

"2. Her yard boy shows up with a power mower to cut the lawn.

"3. Golfers ride the course in electric carts.

"4. Her bank has to have a drive-in window, so she won't have to leave the car to cash a check.

"5. And when you get to her own domain—the supermarket—here is what you find:

"a. Puffin Ready to Bake Biscuits.

"b. Popcorn with the oil already on it.

"c. TV dinners, frozen vegetables, frozen pies—instant coffee—all heat and serve—Turn the dial and let 'em go—just like a dryer!"

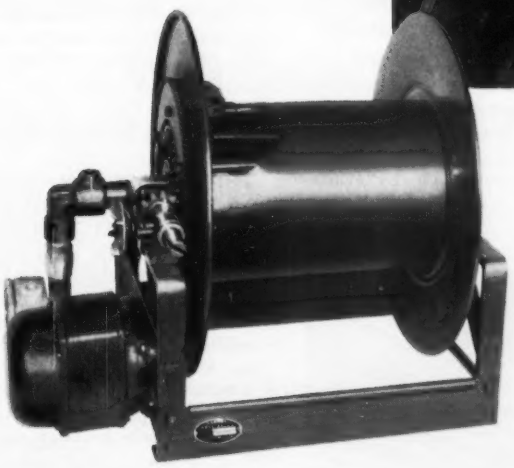
(*At this point Mr. Burnham was going good, and we ran out of space. The last half of his talk is even better. It will be continued in the October issue.*) ■

Suggested Program for Sales Training Meeting No. 13

Dryers are not bought, they are sold. Instead of merely providing the prospect with information on styling and features, the clothes dryer salesman must convince the customer that she should—in effect—change an important part of her way of life. With this in mind, the sales training meeting on dryers should be built around one salesman giving a sales talk to another salesman who acts as the prospect and comes up with plenty of "Yes, buts."

In addition, it will be necessary to point out to salesmen at this meeting the importance to them and to the dealership of selling gas clothes dryers instead of letting them continue to follow the line of least resistance.

on the design board or in the field...



Superior performance in the field—that's what really counts where Hannay Reels are concerned. Design board expectations and developmental work must be justified in actual service.

Because Hannay Reels live up to all that is expected of them, *and more*, they have become the accepted standard of the LP-Gas industry.

You will find it profitable to put Hannay Reels to work for you. Be sure you *specify* and *get* Hannay.

Send for free catalog with complete specifications

. . . Greatest Name in Hose Reels

HANNAY®

© 1958 C.B.H.&S., Inc.

CLIFFORD B. HANNAY & SON, INC., WESTERLO, NEW YORK

Freight savings again won for L. P. gas industry

Freight savings approximating 8 per cent have been won for the L. P. gas industry in 10 southeastern states. Lower rates became effective June 26 and cover movement within these states and shipments from major southwestern and mid-continent producing points. Routings are those used with previous rates.

The Interstate Commerce Commission approved the new rates in an order issued June 19 allowing the lower tariffs to go into effect on one day's notice.

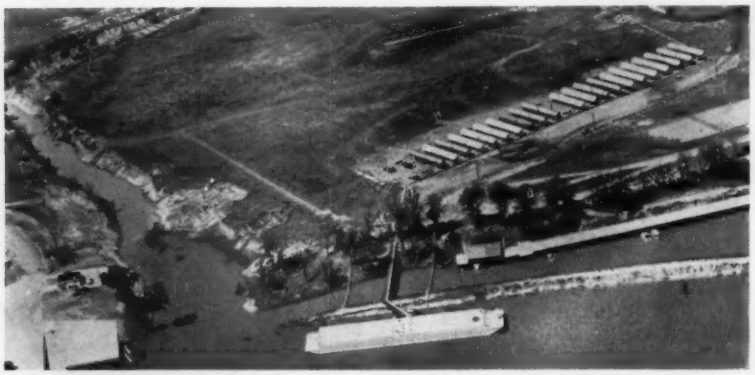
The full value of the southern reductions runs as high as 17 cents a hundredweight on shipments from Tulsa to Charleston, S. C. The recent reduction, together with others previously allowed, eliminates a 6 per cent hike under Ex parte docket 196, 5 per cent under docket 206 and 4 per cent under docket 206A.

The railroads' agreement to make the reductions was secured after industry spokesmen, led by the transportation committee of the national LPGA, pointed to the decline in L. P. gas rail traffic while sales have been increasing. The likelihood of increased erosion of rail traffic was also a strong factor. LPGA also showed that rate increases hurt dealers' chances of realizing the full potential of their home, industrial and motor fuel markets.

The recent reduction is the most significant indication that the railroads are both anxious to hold their share of the L. P. gas haul and to encourage new markets. Similar reduction campaigns are in progress elsewhere with LPGA acting as the leading industry spokesman. Rate cuts have already been approved for hauls from the Southwest to Illinois and part of Western Trunk Line territory. There are strong indications that even more valuable cuts will be made in the important Southwest-to-Northeast haul.

General Gas announces barge terminal expansion

Storage for over 1,000,000 gal. of L. P. gas will be provided following enlargement of its barge terminal on the Flint River at Bainbridge, Ga., by General Gas Corp., major southern LPG distributor.



An L. P. gas barge unloads LPG from Texas at General Gas Corp.'s new barge terminal on the Flint River at Bainbridge, Ga. Twelve more 30,000 gal. tanks will soon be added to the 24 already there.

The barge terminal was completed and placed in service early this year. It serves as a terminus for 400,000 gal. barges which transport LPG from refineries near Houston, Texas, to Bainbridge in southwestern Georgia. The barge route runs from Houston to Harvey, La., via the intercoastal canal, then across the Gulf of Mexico and up the Apalachicola River to the Flint River.

Whereas initially one barge load of LPG was brought into the terminal each month, a barge load is now coming in each week, making the additional storage necessary, Martin F. Dryden, Jr., vice president of General Gas' eastern division reported.

Plans call for addition of 12 more 30,000 gal. L. P. gas storage tanks on the 14 acre terminal site. There are already 24 of the large tanks in service. On this site, the Propane Corp., a wholly-owned subsidiary, can load 10 tank cars and six 8000 gal. transports at the same time.

Revised NFPA 58 and 59 available to LPG dealers

Important changes in standards relating to the handling of L.P. gas have been adopted by the National Fire Protection Association at its recent annual meeting in Chicago.

The Association has issued new editions of the standards—NFPA No. 58, Liquefied Petroleum Gases, and NFPA No. 59, Liquefied Petroleum Gases at Utility Gas Plants — incorporating the revisions.

Standard No. 58 contains new provisions on the location and construction of containers, liquid level gauging devices, exhaust systems, and other provisions pertaining to the design, construction and operation of liquefied petroleum gas installations covered in the scope of the standard.

NFPA No. 59 contains many new changes particularly in the portions of the standard on location of containers, installation of storage containers and handling. This standard pertains to the design, construction, location, installation and operation of liquefied petroleum gas systems at utility facilities.

NFPA Standard No. 58, Liquefied Petroleum Gases, (80 pages, 50 cents) and NFPA No. 59, Liquefied Petroleum Gases at

SIGN OF A SOLID FUTURE...WITH DEPENDABLE SUPPLIES IN A GROWING MARKET

More LP-Gas Distributors are teaming up with Texaco for the long haul because they are assured of dependable supplies—Texaco is one of the largest producers. And the market is expanding. In 1950, less than 3.5 billion gallons were sold. By 1960 the demand is expected to reach 8 billion gallons—9.5 billion by 1965.

If your goal is a solid future, consider this fact: 683 distributors of Texaco products have been with us for 20 years or more—many others for as long as 45 years—proof it pays to team up with Texaco.

5 reasons why it pays to be a TEXACO LP-Gas Distributor

1. Dependable and efficient delivery, in a new fleet of tank cars—from 25 strategically located production areas.
2. A product of highest quality—moisture free.
3. Immediate acceptance, Texaco LP-Gas carries the nationally-known, famous trade-mark, Texaco.
4. One of the largest producers of LP-Gas, The Texas Company is the only petroleum company to build up successful distribution of its products in all 48 states.
5. Profitable and proved sales policies. Texaco markets only through independent distributors.

TEAM YOUR NAME with Texaco and profit . . . faster! Call or write Texaco today . . . The Texas Company, LPG Sales Division, P. O. Box 2420, Philtower Bldg., Tulsa, Okla., Diamond 3-4101—3350 Wilshire Blvd., Los Angeles 5, Cal., DUnkirk 5-0515.

LP TEXACO GAS

Utility Gas Plants, (40 pages, 50 cents) may be obtained from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.

Little Inch LPG pipeline will extend to Atlantic

Texas Eastern Transmission Corp. will give top priority to plans to extend its L. P. gas pipeline transportation system to the eastern seaboard to serve mid-Atlantic and New England states, according to Millard K. Neptune, senior vice-president of the company. The decision to accelerate was made, Mr. Neptune said, after completion of a successful shipment of propane from the Gulf Coast to Lebanon, Ohio, which proved the ability of the line to satisfactorily handle liquefied petroleum gas.

The first shipment of LPG through the Little Big Inch pipeline arrived "up to specifications" at Lebanon, the line's northeastern terminus, 30 miles north of Cincinnati, according to Mr. Neptune.

"The shipment, a 180,000 bbl test batch, definitely measured up to expectations upon its arrival at Lebanon," Mr. Neptune said. The special equipment of the Little Big Inch system handled the shipment very satisfactorily, he said.

A second shipment of 165,000 bbl is scheduled to begin moving from Baytown, Texas, through the Little Big Inch during the latter part of July and is destined to arrive in three weeks' transit time at Lebanon.

"Also, Texas Eastern has begun construction of a fractionating plant that will process L. P. gas sent to the Lebanon area before it is released to customers to assure delivery of a pure product," Mr. Neptune said. "This plant is being erected on the site of Texas Eastern's new LPG underground storage cavern now under construction about 15 miles southwest of Lebanon and approximately 30 miles north of Cincinnati. This storage facility will be known as the Todhunter Terminal. The fractionating plant is expected to be completed and ready for operation by December 1."

Complete truck and railroad delivery facilities will be constructed at the Todhunter Terminal, he said. These facilities are also expected to be completed and ready for operation by December 1.

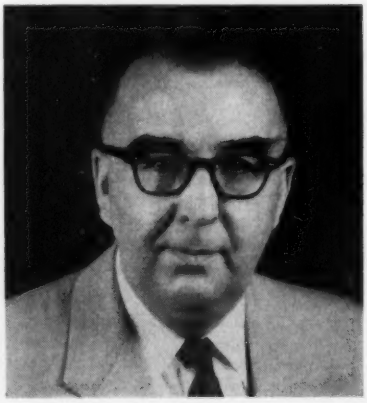
Activity is ahead of schedule in construction of the Todhunter underground storage facility, Mr. Neptune said. Drilling crews are now nearing completion of the 42 in. diameter shaft leading down to the cavern area about 350 ft below ground level.

The entire Todhunter Terminal is scheduled to be completed and in operation by August 1, 1959, Mr. Neptune said. When in operation, the terminal will be used to store and distribute L. P. gas by truck and rail transport over a wide range of states from Michigan to New England. The LPG will be transported to the terminal from Gulf Coast origin points through Texas Eastern's Little Big Inch line.

The cavern at Todhunter will hold more than 12,000,000 gal. of LPG when complete, Mr. Neptune said. There is sufficient proven land on the 89-acre site to permit construction of eight other caverns of the same size.

Industry authority offers home study LPG course

The first section of a 10 section home study course on "L. P. Gas Equipment and Utilization" for LPG installation and service men is now available from the course's author, Earle A. Clifford. Mr. Clifford, until this year head of the Gas Fuel Technology Department, Southern Technical Institute, now heads the Industry Training School, Route 1, Farmington, Maine.



Earle A. Clifford, with over 20 years experience in the L. P. gas industry, now heads his own educational institution, the Industry Training School, which currently offers a complete home study course for LPG installation and service men.

The course is arranged so that students can take only those sections which appeal to them and sections are paid for as ordered, making the financial burden light. A total of 79 lessons are included in the 10 sections.

Students study at home and are tested on what they learn by a local sponsor who might be the service manager, the LPG dealer, or a local high school physics teacher.

The course includes:

Section 1: L. P. Gas Installations (10 lessons); section 2: Advanced Installation Problems (6 lessons); section 3: Basic Engineering Fundamentals (8 lessons); section 4: Combustion (6 lessons); section 5: Gas Controls (6 lessons); section 6: Gas Appliances (8 lessons); section 7: Industrial Utilization of L. P. Gas (8 lessons); section 8: L. P. Gas Carburetion (10 lessons); section 9: L. P. Gas Bulk Plants (12 lessons); and section 10: Sales and Public Relations (5 lessons).

Mr. Clifford has had over 20 years' experience in the L. P. Gas industry in engineering, sales, education, and writing. He is author of several books on L. P. gas.

Green's Fuel meeting 100% dealer represented

The annual Green's Fuel Distributor's convention was held at the Lido Biltmore Club in Sarasota, Fla., on June 19-20 with an attendance of 200 from North Carolina, South Carolina, Georgia and Florida points; event was 100 per cent dealer represented.

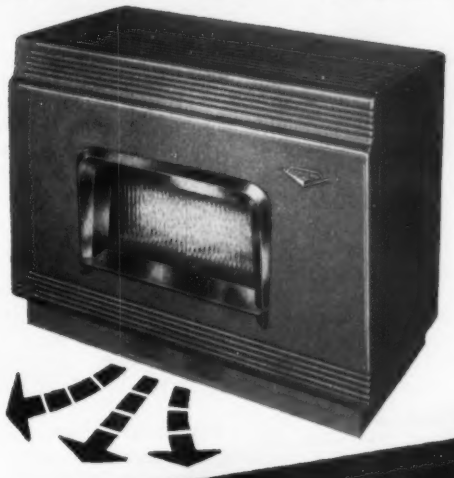
The meeting opened with an address by K. H. Koach, president of Green's Fuel Inc., who was followed by Ralph L. Sieben, president of Metrogas Inc., Chicago, whose topic was "The Contribution of Cost Controls to Business Profit."

Dr. Frank Goodwin, professor of Marketing at the University of Florida, Gainesville, addressed the assemblage on the subject of "Combating Sales Obstacles in Today's Economy."

C. B. DeBerry Jr. and his colleague, Earl Schriener, who are associated with St. Petersburg Gas Appliance Co. Inc., The Green's Fuel distributorship at St. Petersburg, Fla., followed Dr.

LOW BOY

radiant front



RVC SERIES

IN 7 SIZES
FROM 20,000 TO 65,000 B.T.U. INPUT

Peerless gas console heaters are available with counter flow blowers, automatically controlled, that give you warm floors in all parts of the home. These heaters are approved by the American Gas Association for use with natural, L. P., mixed, and manufactured gases.

Peerless® GAS CONSOLE HEATERS

WITH **Counter Flow Heat** OPTIONAL

VC SERIES

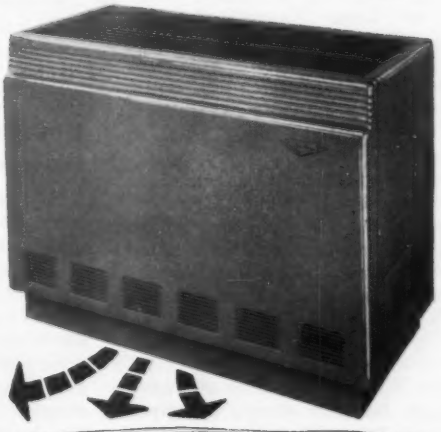
IN 8 SIZES
FROM 14,000 TO 65,000 B.T.U. INPUT

The Counter Flow Blower attachment fits the 45,000 to 65,000 B.T.U. Heaters, either open or closed fronts. It is complete with its own temperature control. The boost given by this blower distributes heat to distant rooms and maintains an even temperature between floor and ceiling . . . lower Ceiling temperature means less heat loss. Can be had initially with heater or installed later.

PEERLESS MANUFACTURING DIVISION
OF DOVER CORPORATION
LOUISVILLE 10, KENTUCKY

LOW BOY

closed front



GAS Peerless® | *The modern fuel* — THE MODERN HEATER

At the Green's Fuel speaker's table (from left to right) are W. P. Wyrick, Texas Natural Gasoline Corp.; Mrs. and Mr. Frank Engle, Tulsa, Okla.; Mrs. and Mr. K. H. Koach, president, Green's Fuel Inc.; Col. Lou Lancaster, Clayton & Lambert Manufacturing Co., Louisville, Ky.; Mrs. and Mr. John Oxley, president, Texas Natural Gasoline Corp.; and Mrs. W. P. Wyrick.

Goodwin with a demonstration of their motorized L. P. gas air conditioning equipment which was set up on the premises. This demonstration was concluded with an open forum discussion on the subject.

R. M. Marberry, sales manager for Whirlpool Corp., St. Joseph, Mich., pointed out to those in attendance "What is Planned for the RCA Whirlpool Gas Refrigerator" and one of the new 1958 models was on display.

At the conclusion of Mr. Marberry's talk, John T. Oxley, president of Texas Natural Gasoline Corp., Tulsa, Okla., the parent organization of Green's Fuel was called to the rostrum to bring before the assemblage the subject of "Planning Your Next Peakload Season."

John Henderson, sales manager for Clayton & Lambert Manufacturing Co., Louisville, Ky., whose company makes the trade-name Green's Fuel glass-lined water heater, gave an illustrated address on the subject "Profit in Selling Quality."

Following Mr. Henderson, W. Phillip Wyrick, treasurer of Texas Natural Gasoline Corp., chose as his topic "Simplified But Effective Accounting Procedure for L. P. Gas Operations."

A friendship hour followed by a banquet concluded the convention. Guest speaker was "Colonel" Lou Lancaster, Clayton & Lambert, who entertained the convention with his subject "A Lot of Sense About Nonsense."

Petrolane Gas purchases Calor Gas Service Inc.

Petrolane Gas Service Inc. has purchased the common capital stock of Calor Gas Service Inc., according to an announcement by R. J. Munzer, president of Petrolane. The purchase was made for cash.

Acquisition of the 23 Calor retail branches raises the number of Petrolane distributing plants to 107 and increases sales by 9 million gal. to nearly 11,000 additional retail customers.

Petrolane now serves 60,000 customers throughout the states of Arizona, California, Idaho, Montana, Nevada, North Dakota, Oregon, Utah, Washington and Wyoming. While most of the newly acquired plants provide expansion into new territory, there are a few that can be more economically combined with existing Petrolane plants.

Gas furnace shipments show huge gain in July

All types of gas-fired equipment for residential central heating scored gains in June, with furnaces up an exceptional 27.6 per cent, the latest Gas Appliance Manufacturers' Association summary shows.

Gas water heaters also showed gains over June, 1957, while ranges narrowed the gap by which monthly shipments have been trailing last year's.

Manufacturers shipped 70,700 gas furnaces of the forced warm air and gravity type during June, Edward R. Martin, GAMA director of marketing and statistics reported. This compares with 55,400 a year earlier and 56,600 the previous month. For the half year the latest total is 319,800, up 8.4 per cent from 294,900 in 1957.

Gas-fired boilers for hot water and steam heat accounted for shipment of 9,300 units in June and 40,500 in six months, representing gains of 9.4 per cent and 3.1 per cent respectively over year-earlier figures of 8,500 and 39,300. The latest first-half total is a record high for the period.

For conversion burners, used in changing heating systems from other fuels to gas, the figures are 11,000 shipped in June and 50,000 in six months, up 4.8 per cent and down 1 per cent, respectively, from 1957 totals of 10,500 and 50,500.

For furnaces, boilers and conversion burners combined shipment figures are 91,000 for June and 410,300 for six months, up 22.3 per cent and 6.7 per cent from year-earlier gas central heating totals of 74,400 and 384,700.

The 228,100 automatic gas water heaters shipped in June represented a 7.7 per cent gain over the 211,700 for the 1957 month. The June shipments brought the six months total up to 1,332,800, almost identical to the 1,333,000 recorded in the first half of last year.

Built-in gas ranges had the highest monthly shipment total in the history of this product, while June's figure for free-standing models came closer to 1957's than any time previously this year.

Whirlpool contest based on recorded sales talks

Recognition as Whirlpool's best informed and most polished retail salesman of laundry equipment, plus $750, will be the rewards for the winner of Whirlpool Corp.'s new "Best on Record" contest.

The contest works this way: distributor salesmen record sales pitches by retail salesmen on any product in the RCA Whirlpool laundry line. Tapes are first judged at distributor level, then, in a succession of eliminations, at regional and national levels.

As each plateau is reached, winners receive larger prizes. The winner of the national award will receive $500 cash, plus that Winners in distributor areas receive $50 Savings Bonds while

2,000,000 GALLONS PER YEAR — are recorded on Suburban meters . . . yet they have only 45,000 gallons plant storage capacity. This amazing sales-storage ratio is possible because metered gas has enabled them to store 600,000 gallons in customer's tanks.

PAY-AS-YOU-GO-PLAN . . . DOUBLES LP-GAS MARKET

Suburban's metered gas program did it. Smashing the barrier of big cash outlay, Suburban Gas Company, Montgomery, Alabama, is turning prospects into customers. Now a new LP-Gas user can put his money into appliances he needs while Suburban installs the LP-Gas system and puts the gas in on meter. The door has swung wide open on a whole new market that couldn't have been sold under other plans.

To set the stage for the program, Suburban arranged for long-term financing on Beaird LP-Gas systems to be placed on meter. Then the plan itself was activated . . . installation was set at $59.50 and gas charged at a monthly minimum ($3.90 whether gas is used or not). Gas pricing included a slightly higher tab for about the first 20 gallons each month with a decrease for greater usage. Suburban has found the monthly minimum insures sufficient return to pay the Beaird LP-Gas system out during the normal finance period.

The monthly minimum spurred customers to develop a year-round load and not use LP-Gas just for heating. As a further inducement Suburban offered to apply the installation cost against the purchase price of the Beaird system. Some customers do buy the LP-Gas system during the first two to three years of gas service. Suburban has doubled their business and increased profit per gallon sold . . . simply by making it easier to have an LP-Gas equipped home.

Get the full story on how to make more money with a Beaird lease or metered gas program in your area. Your Beaird representative has the experience and knowledge to get you started profitably . . . write or call today.

TURN THE PAGE TO SEE HOW PROFITS MULTIPLY WITH A METERED GAS PROGRAM

SALES RESISTANCE MELTS — when the big cash outlay is removed by Suburban's metered gas plan. This customer, Farmer B. H. Gibbons went all the way — 2 tractor conversions and a full LP-Gas home.

TWO HUNDRED BEAIRD 500-GALLON LP-GAS SYSTEMS — were put out on lease in the first year of the program. Today 500 systems are currently on meter. Some have been purchased by users since the program was instituted.

THE SUBURBAN MANAGEMENT TEAM — L to R, John Rooney, vice president; G. Frank Hughes, general manager; Capt. W. C. Hughes, USNR, vice president; and E. R. "Sug" Hughes, president.

SUBURBAN PUTS EMPHASIS ON MERCHANDISING — "Sug" and Frank Hughes map summer LP-Gas promotion plans around Beaird sales and merchandising aids. Tony Abbott, Beaird sales representative, shows how to use Beaird "point-of-purchase" wall chart in employee training.

PUBLIC SERVICE DEPARTMENT — headed by economist Lena Rush. Suburban believes that a satisfied customer is the best customer. Economist Rush makes sure customers know how to use LP-Gas appliances efficiently.

THREE DELIVERY TRUCKS — serve 3,000 customers . . . two-way radio sends the nearest truck to any emergency . . . saving many miles. But the real secret lies in metered gas which levels out delivery.

UTILITY TYPE ROTARY BILLING — with information printed by the billing machine on postal cards is another example of the careful planning and efficiency of Suburban's operation.

10,000 GALLONS ANNUALLY — are sold to Wadsworth Bros. Farm. Suburban makes tractor conversions to build year round balanced fuel load and beat the summer slack season.

SUBURBAN'S MODERN NEW OFFICES — symbolize their successful forward looking operation. Employees have benefited too . . . the metered gas program has placed all employees on a full-time year-round basis. There is no seasonal hiring and firing and very little turnover in employees. In fact, most employees have long service records with Suburban.

BEAIRD
another AMF product
LP-GAS & NH-3 EQUIPMENT

THE J. B. BEAIRD COMPANY, INC.
A Subsidiary of American Machine & Foundry Company
Shreveport, Louisiana Clinton, Iowa Stockton, California

picked up in earlier eliminations. regional winners will receive $200 in cash. Distributor salesmen also ride along with their retailer winners, receiving prizes in slightly smaller amounts.

The new contest provides for distributor winners to be chosen by October 30, with the national winner being announced on November 15.

Suburban Gas Service sales, income up 25%

A 25 per cent increase in both sales and income was registered by Suburban Gas Service Inc., Upland, Calif., for the fiscal year 1957-58. Suburban now serves 48,500 customers through 86 plants in seven western states.

Sales for the year ended April 30, 1958, were a record $8,356,065 compared with $6,685,123 for the year before. A total of 51,686,000 gal. of LPG was sold.

Net profit was $867,866 compared with the previous year's $693,574.

"The major portion of the sales increase stemmed from the acquisition program which the company pursued vigorously during the year," stated Suburban President W. R. Sidenfaden. "In addition, previously established marketing areas, despite warm winter weather of unusual degree and duration, maintained their volume of sales," he added.

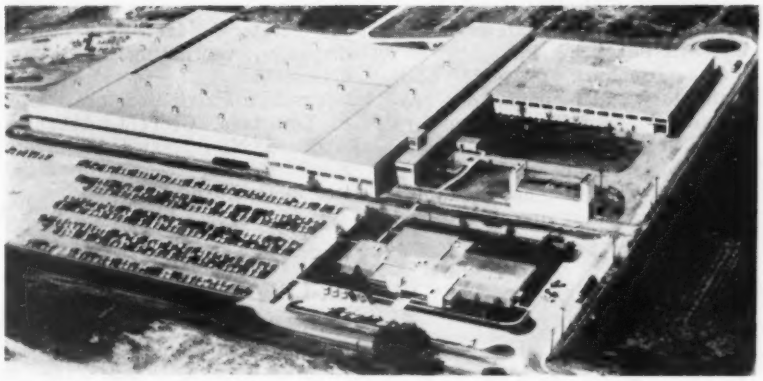
Lloyd is president of Pyrofax Gas Ltd., Canada

D. S. Lloyd

At a recent meeting of the board of directors of Pyrofax Gas Ltd., David S. Lloyd was elected president and Walter A. Naumer was elected chairman of the board. Mr. Lloyd was formerly vice president and Mr. Naumer was president.

Mr. Lloyd joined Dominion Oxygen Co. Ltd., forerunner of the present Linde Air Products Co., division of Union Carbide Canada Ltd. in 1925. Over 25 years ago, he cooperated with Pyrofax in the introduction of propane gas in cylinders into Canada. From 1954 to 1957, he served as president of Union Carbide's Linde Air Products Co. In 1957 he was appointed a vice president and director of Pyrofax Gas Ltd.

Mr. Naumer, president of Pyrofax Gas Corp., New York, started his career with the company in 1926.



Flint Steel Corp.'s new $2 million completely integrated steel fabricating plant at Tulsa. Flint Steel manufactures processing and major storage equipment used in the petroleum industry at the new location. The fabricating facility includes a total of 364,000 sq ft under one roof. Also included is a 20,000 sq ft office building. The corporation also has a plant at Memphis, Tenn., engaged in the manufacturing of tanks for the transportation, storage and distribution of L. P. gases and anhydrous ammonia fertilizer.

Underground storage set for Saskatchewan, Canada

Construction has begun on three underground caverns for LPG storage in the Devonian salt beds near Melville, Saskatchewan, Canada. Total capacity will be 14 million gal.

The project, first in Saskatchewan, was given a go-ahead following test core drilling by Dome Petroleum Ltd. That company, together with Provo Gas Ltd., is currently constructing a casing head gas processing plant in the Steelman oil field. L. P. gas will go by tank car from the gas plant to the underground storage, where it will be withdrawn as needed.

Cavern construction will take two months.

Tube Turn fittings have individual packaging

A program of individual packaging to safeguard the quality of each one of its stainless steel and non-ferrous welding fittings and flanges for industrial piping has been announced by Tube Turns, Louisville, Ky. division of Chemetron Corp.

Every stainless steel and non-ferrous alloy fitting in sizes up to and including 12 in. and all flanges up to and including 8-in. will be individually packed in a sleeve-type cardboard cylinder of a type built to government specifications for packing artillery shells. The packaging program, designed to safeguard the product all the way from plant inspection to job installation site, was adopted after more than a year's study by Tube Turns' production, merchandising and traffic personnel.

R. W. Murry named new Uregas purchasing agent

Richard W. Murry has joined the Uregas Companies as purchasing agent and will be headquartered at the firm's general offices at Moberly, Mo.

Earl Epping, former purchasing agent for the midwest LPG chain, has become territory manager in a 10-county area in the Moberly district.

Mr. Murry was graduated from Missouri University this spring with a master's degree in marketing.

Free book offered on care of extinguishing equipment

The new "FEMA Handbook of Safety Codes," which is now available, outlines the various procedures for maintaining, protecting, recharging, and inspecting fire extinguishing equipment commonly used throughout the gas industry.

Containing 42 pages, it is available at no cost from the Fire

Equipment Manufacturers' Association, Inc., One Gateway Center, Pittsburgh 22, Pa.

The brochure presents both mandatory and recommended procedures to be followed to assure long life and efficient service from portable fire extinguishers, carbon dioxide systems, standpipe and inside hose systems, and fixed foam systems.

18 receive S & R Gas' safe driving award

The S & R Gas Co., Coushatta, La., recently awarded safe driver awards to 18 of its employees. The awards represented a total of 65 years safe driving.

The company, which covers approximately 12 parishes in northern Louisiana and entered the butane business in 1945, employing approximately 35 employees, has had in effect a strict safety program since the beginning of its operation.

Chambers Built-Ins Inc. appoints 11 distributors

Chambers Built-Ins Inc. has appointed 11 new distributors to handle its complete line of matched and packaged kitchen appliances.

Arthur H. Scheffer, national sales manager, stated that Chambers markets a full built-in line including gas ranges and ovens, refrigerators, freezers, kitchen disposers, ventilating hoods and dishwashers.

The new distributors are located in Louisiana, Georgia, Arkansas, Alabama, New Mexico, Minnesota, South Dakota, two in Iowa and two in California.

Whirlpool will show all-LPG kitchen at fair

When some quarter million farmers and their wives descend on the Warren North Farm at Brookston, Ind., September 24 and 25 for the World's Fair of Agriculture, they will be treated to full demonstrations of a complete L.P. gas kitchen.

This was revealed by Whirlpool Corp.'s director of marketing, Jack Sparks, who said an RCA Whirlpool gas kitchen will be set up in the main tent, with demonstrations scheduled daily for 9 and 11:30 a.m. and 3 p.m.

Ths is the second year that Whirlpool has been invited to provide kitchen demonstrations for the farm wives while their husbands are observing farm implement demonstrations.

Whirlpool home economists will offer homemaking hints as they use and discuss the modern appliances in the kitchen. Among the products to be shown will be the gas refrigerator, built-in gas surface cooking unit and twin ovens, the combination washer-dryer, dishwasher, and freezer.

K. H. Koach (center), president of Green's Fuel of Florida Corp., presents a 10-year service pin to Robert Haskins at a dinner honoring veteran employees. Fifty employees were present at the Lakeland, Fla., dinner which commemorated an accumulative total of 222 years of service in the central Florida area. Similar dinners have been held for east coast and west coast branches. Seated are W. W. Wallace (left), manager of the Bartow office of the firm, and R. E. Turner, vice president and general manager of Green's Fuel.

Pyrofax Gas opens three new plants in south

Pyrofax Gas Corp., a unit of Union Carbide Corp., has recently opened three new filling plants according to Walter A. Naumer, president.

Mr. Naumer said that combined cylinder filling and bulk plants have been opened in Oceana, Virginia and Orlando, Florida, and that cylinder filling facilities have been added to the existing bulk plant at Gainesville, Georgia.

This brings to 105 the number of Pyrofax gas cylinder filling and bulk plants servicing the company's 650 distributors in 31 states and Canada, an area greater than that covered by any other similar fuel service.

A. O. Smith's Tegler speaks before NAPC

"The water heater made in 1948 is like a colt grown to a thoroughbred in 1958," L. T. Tegler, technical director of the Permaglas division of A. O. Smith Corp., told the National Association of Plumbing Contractors on July 2 in Los Angeles.

In 1948, Mr. Tegler said, 25,000 Btu/hr was considered a good input with the industry's standard 30-gal. heater. But today, he pointed out, 36,000 to 40,000 Btu/hr would be considered average. The heater produced today is not larger, he added, but its input has almost doubled.

Mr. Tegler reminded the contractors that with these improvements in water heaters there is a need for customer education on the performance characteristics of the heater.

Salaries of executives up 4.8 per cent this year

The salary of the "average" business executive in the middle management category increased 4.8 per cent—from $11,240 a year to $11,800 a year—from last year to this year, The American Management Association's seventh annual survey of middle management compensation indicates.

The sixth annual middle management survey, issued just a

A NEW NAME

SINCLAIR Truflame LP-Gas

for a fine, well Established Product

New Advertising Plan for Sinclair LP-Gas Distributors

Ask about the new advertising plan offered Sinclair TRUFLAME distributors. It is one of the most comprehensive plans ever offered to the industry. This advertising plan adds another extra to Sinclair's "famous five"—INTEGRITY, REPUTATION, QUALITY, SERVICE and PERFORMANCE.

As a Sinclair LP-Gas distributor you now have the added prestige of a brand new LP-Gas trade name. TRUFLAME, a name selected after months of research, is for the exclusive use of Sinclair LP-Gas distributors, in conjunction with their own names.

TRUFLAME is a name your customers can easily remember. By using the names of your company and Sinclair TRUFLAME together, you will give top consumer recognition to your LP-Gas. This new nationally advertised trademark will gain respect with each passing year.

MEMBER NATIONAL LP-GAS COUNCIL

MEMBER LPGA

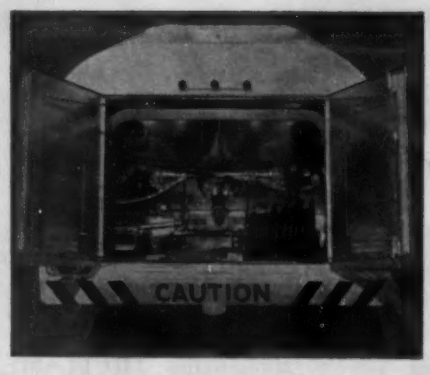
Sinclair Oil and Gas Company
Liquefied Petroleum Gas Sales Department
Sinclair Oil Building, Tulsa, Oklahoma

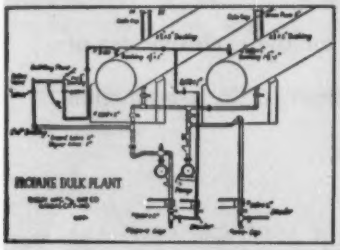
SINCLAIR
A Great Name in Oil

Your One Supplier with everything in L. P. gas and Anhydrous Ammonia Equipment

"The Loadmaster" LPG Truck Tank

PASLEY-DESIGNED Truck Tanks (see above and right) were first to feature all controls from one location. **All operation is from one point—rear compartment.**





BULK PLANTS Pasley LPG and Ammonia type installations — a turnkey job or engineering for your own installation. Write, wire or call.

Also a complete line of accessory equipment.

"Pastels By Pasley"

COLOR — The Modern Trend! Bring your LPG Equipment up to date. Available in the following colors . . . (write for information)

Blush Peach	**Smoky Grey**
Sunshine Yellow	**Seafoam Blue**
Mustard Lime	**Wedgewood Green**
Eureka Orchid	**Rose Beige**
Lake Blue	**Desert Rose**

EVERYTHING IN LPG AND ANHYDROUS AMMONIA

The Pasley Mfg. & Dist. Co.

401 East 11th Street • Kansas City, Mo. • Tel. Victor 2-2366

year ago, reported a 5.8 per cent salary increase for a corresponding period of time. The lower salary increases granted during the past year, the current report notes, apparently reflect the leveling off in business activity that developed in the latter part of 1957.

L. P. gas a product of shale oil process

The Denver Research Institute, University of Denver, recently announced that a process has been developed whereby America's vast oil shale deposits can now be made to yield liquid fuel at costs competitive with those for domestic petroleum.

Among the gases produced in the process are light petroleum gas,

Oil shale deposits. It is estimated that there is 1.5 trillion bbl in Colorado alone.

which can be separated out and sold as L. P. gas. The remaining gas is roughly comparable in heating value to conventional manufactured gas.

Deposits in Colorado alone have been estimated by the U. S. Geological Survey to contain some 1.5 trillion bbl of shale oil—50 times as much as the nation's proven crude reserves and more than seven times as much oil as is known to exist in the world. Other large deposits of oil shale are located in Wyoming and Utah, and it has been found in at least half of the 49 states.

Publishers of BPN retain noted readability expert

Robert Gunning has been retained as a consultant for Chilton magazines, G. Carroll Buzby, president of Chilton Co., has announced. Chilton publishes 16

Cut your costs with greater customer satisfaction!

TEMCO

. . . best-built, best-engineered gas heating equipment on today's market!

Temco-built for bigger profits!

The sheer ease with which you sell Temco gas heating equipment means greater profits right from the start! Your customers know the Temco name! They also know the value of Temco specialization which makes this famous, quality-built gas heating equipment cost less to own, less to operate! Your big plus to greater sales is this added promise: Temco gas heating appliances last longer, too! On every sale you make, you can assure your customer a written 20 year warranty on Temco's exclusive Ceramiclad* heat exchanger! Your promise . . . and Temco's written warranty to prove it!

Temco-engineered for fewer service calls!

The wonderful peace of mind with which you install Temco gas heating equipment means extra profits! Because, Temco engineering assures you, as well as your customers, of the most efficient, trouble-free heating equipment money can buy! All Temco gas heating equipment is designed to make your selling job a little quicker, a lot easier—in both farm and urban areas—where Temco gas heating appliances work perfectly . . . conveniently . . . and economically . . . on L.P. gas!**

**Operates equally well on natural and manufactured gas.

Temco-designed for more completeness of line!

The exceptional pride with which you write up your orders, and fill them immediately—with any of the models from Temco's 1958 line . . . the great, new line designed to help you reach every market . . . to help you sell in every price bracket!

TEMCO SPACE HEATERS

Vented and Unvented (both radiant and circulator models) Specifically designed for quick, small-area heating.

TEMCO "PIN-UP" HEATERS

New, unvented heaters that hang on the wall—with only 4 screws. Perfect for zone-controlled heating!

TEMCO "PRE-VENT" HEATERS

Pre-engineered thru-the-wall construction that requires no chimney, no recessing. Installs in any outer wall, at any level—even under windows!

TEMCO UNIT HEATERS

Compact units that provide maximum headroom in restricted areas; suspend from two pipe hangers. Ideal for commercial installations—service stations, restaurants, warehouses, etc.

TEMCO WALL HEATERS

Fit right into the wall between standard studding. Perfect for slab foundation homes. Provide ideal zone-controlled, single-story heating.

TEMCO FLOOR FURNACES

Exceptionally shallow construction permits easier, more economical installation. Mounts flush in the floor. No basement or costly excavation required! All Temco Floor Furnaces, regardless of BTU size—are only 25½" deep and controls are factory installed.

TEMCO CENTRAL HEATING SYSTEMS

A complete line . . . Hi-Boys, Lo-Boys, Counter-Flows, Horizontal and Gravity Furnaces, with a complete selection of sizes in each series. There's a Temco central heating system to fit any application—basement, crawl space, alcove or attic . . . including the amazing new

TEMCO PERIM-AIR-PAC

A completely packaged* gas forced-air system that uses the superior method of perimeter heating! Blankets outer walls with warm, clean, filtered air! Installs in only one day, with no major construction or labor costs!

*Includes ducts, registers and plenums.

TEMCO, inc.

NASHVILLE 9, TENNESSEE

"Gas Heating Specialists for the Nation"

"THE COMPLETE LINE OF GAS HEATING EQUIPMENT"

ROOM HEATERS • FLOOR FURNACES • WALL HEATERS • UNIT HEATERS
WARM AIR FURNACES • AIR CONDITIONING • GAS WATER HEATERS

Reach out now . . . for all the market! Mail this coupon today for Temco's '58 catalogue—featuring this great new sales-making line!

TEMCO, Inc., Nashville 9, Tennessee

Please send me full, descriptive catalogue.

Name _____

Firm Name _____

Address _____

City _____ Zone ____ State _____

BTN-3

business and industrial magazines including BUTANE-PROPANE *News*.

Mr. Gunning's work will be one phase of a new Chilton Readability Program. Its aim is to make the magazines more readable so that readers will spend more time with the magazines and read into them more deeply.

This is the first time Gunning has been retained by a publisher on a continuous basis. Chilton and other publishing houses have worked with Gunning in the past on a spot basis. But, under this new plan, Chilton magazines will be under constant review by Gunning.

Gunning is noted for his work in the field of clear writing and as the inventor of the Fog Index, a measure of reading ease.

Besides the Gunning phase, the Chilton Readability Program, Mr. Buzby explained, will include studies of more effective type faces, headings, etc. Readability is also to be enhanced through scientific visual methods of presentation.

The Readability Program will be integrated with editorial traffic studies and perceptual studies being made by the Chilton Research Department.

Economy of construction and good design have already made Redi-Gas Co.'s Tacoma, Wash., sales office and distribution headquarters an architectural "show piece" in the Pacific Northwest. The vaulted roof section over the entrance, as well as the flat roof over the main building are of dual purpose stressed skin panels of fir plywood which provide ceiling and roof surfaces in one component. A simplified roof system and post and beam construction method helped hold the construction costs down to $8 a sq ft.

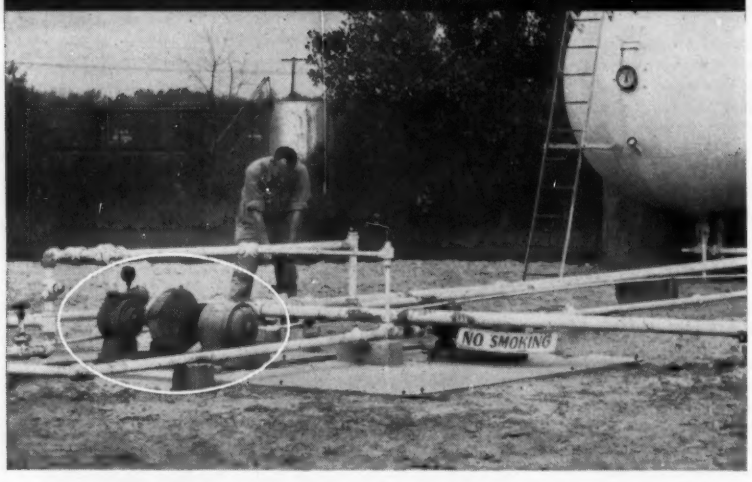
Gas dryers continue gain over electric models

Gas clothes dryer sales in June were up 44 per cent over May and 33 per cent over June, 1957, compared with corresponding increases of only 22 and 5 per cent for electric models, according to American Home Laundry Manufacturers' Association figures.

Electric dryers still lead in unit sales with 34,913 units sold in June compared with 19,260 gas models.

Total factory sales of all home laundry appliances in June were up 13 per cent from May and 1 per cent from June, 1957.

RUGGED, DEPENDABLE
BLACKMER ROTARY PUMPS



- setting new records of performance in bulk plant and truck pump service

The outstanding performance of Blackmer pumps in liquefied gas applications is evidence of the value of Blackmer quality. Meeting the highest standards of design and construction, Blackmer pumps give a bonus of efficiency, trouble-free service and safety.

WRITE FOR BULLETIN 500

HEAVY-DUTY ANTI-FRICTION BEARINGS located on both sides of the rotor and completely isolated from the pumpage.

CARTRIDGE-TYPE MECHANICAL SEALS located on both sides of the rotor to control shaft leakage and protect the bearings from pumpage. Easy to replace. Require no adjustment after installation.

SLIDING VANES which are "self-adjusting for wear" to maintain high efficiency over long periods of service.

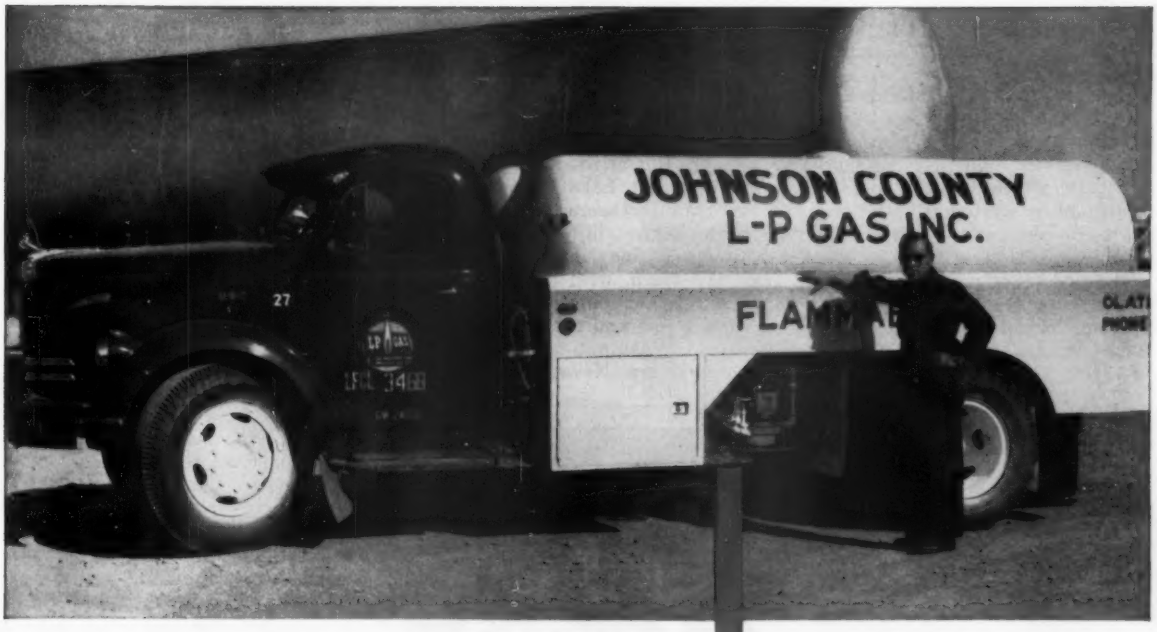
Listed by Underwriters' Laboratories, Inc. UL

"liquid materials handling"® equipment

BLACKMER

BLACKMER PUMP COMPANY, GRAND RAPIDS 9, MICHIGAN

See Yellow pages for your local sales representative



ROCKWELL

ER-Series Oscillating Piston LIQUID LPG METERING SYSTEM

We've made it easy and economical for you to get all the benefits of an LPG truck metering system. Now you can have a simple Rockwell ER-Series oscillating piston meter hooked up to a patented pressure loaded dispensing system that positively eliminates vapor and assures measurement of only liquids. This meter has fewer parts than others. Its accuracy and durability have been proved over many years.

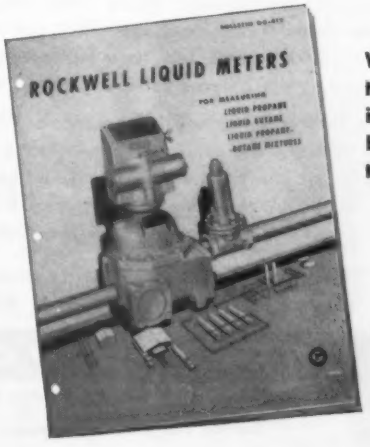
EASY SCREW-TURN ADJUSTMENT

The Rockwell ER-Series meter has an *external micro-adjustment* that permits a wide range of calibration to extremely fine limits. You do this with the turn of a screw driver. *There's no need to dismantle the meter or to use change gears when adjusting for accuracy.* Get full facts now. See your nearby Rockwell jobber, district office or write for literature. Rockwell Manufacturing Co., Pittsburgh 8, Pa.

LP-GAS VAPOR METERS
another fine product by
ROCKWELL

EVERYTHING YOU NEED FOR ACCURATE TRUCK MEASUREMENT IN ONE EASY-TO-INSTALL PACKAGE

You can buy the Rockwell ER-Series metering unit in either 1" or 1½" size with a capacity of up to 70 gpm. We furnish meter, differential valve and strainer. An easy-to-follow installation diagram is furnished with each order.



Write for this informative bulletin today

NEWS NOTES

Robert J. Travis, Norwich, N. Y., has been appointed as a district representative in New York state for Timken Silent Automatic Products, which include home air conditioning systems; residential gas furnaces, boilers and burners.

General Electric's Communication Products Department has appointed Radio Message Service Inc., Atlanta, Ga., as a manufacturer's representative for the sale of GE two-way radio equipment. Radio Message plans to cover Georgia, Alabama and Tennessee.

Insto Gas Corp. announces the appointment of the W. Blaine Martin Co., Salt Lake City, Utah, as its manufacturers representative in the mountain states territory. Mr. W. Blaine Martin will be the contact man with Insto-Gas distributors for both the torch and furnace line and the heater line in eastern Washington, eastern Oregon, eastern Nevada; the entire states of Montana, Idaho, Wyoming and Utah and the state of Colorado on heaters only.

Sid Harvey's store in Union City, N. J., has moved to 725 14th St. With this move the company will now occupy twice the space it had in the store it had occupied since 1950. The new store is only a few blocks away from the previous one and will have the same telephone number.

Two Greensburg, Pa., high school students were named winners of engineering scholarships offered by Robertshaw Thermostat division, Robertshaw-Fulton Controls Co. Clair G. Askew received a four year scholarship valued at $1000 a year to Pennsylvania State University. Edwin Shuey was the recipient of an $800 a year scholarship for four years at Carnegie Institute of Technology.

Household Gas Service Inc., Oneida, N. Y., has filed articles with the secretary of state office at Albany increasing its capital stock from $300,000 to $600,000.

Bastian-Blessing's 7564 and 7565 four port relief valve manifolds, and the 3149B and 3149G safety relief valves have been officially approved by the Factory Mutual Laboratories. This marks the first instance in which a relief valve manifold capable of protecting a 30,000-gal. container has been listed by Underwriters' Laboratories Inc. and approved by Factory Mutual.

The election of F. M. Banks and Graham L. Sterling Jr. to the board of directors of Suburban Gas Service, at the annual meeting of shareholders is announced by W. R. Sidenfaden, president. Directors re-elected to serve for the ensuing year are: W. R. Sidenfaden, W. S. Hughes, R. C. Harris, Ralph E. Gain and Paul Fannin.

Ralph E. Gain has been elected a vice president of Suburban Gas Service Inc., Upland, Calif. Mr. Gain has been associated with the firm since its inception in 1948. He is currently secretary-controller and will retain that position in addition to his vice presidency.

Lied Distributing Co. of Omaha, Neb. has been franchised to handle the complete line of Hamilton automatic laundry equipment.

FIG. FH 696

NEW VIKING L-P GAS PUMP

You've been telling us there's a need for a low-priced pump for farm tractor and truck fueling. So here it is. Small! Rugged! Dependable! Viking Pump engineers designed this pump especially for farm use. They cut cost by using a small pump, directly mounted to a high-speed motor. It has an integral safety by-pass valve and needs no vapor return.

Even though low-priced, this pump is Viking quality through and through. It's genuine "Gear-within-a-Gear" construction. Gears are hardened steel. It only weighs 45 pounds and is less than 17 inches long, yet it pumps 5 GPM at 3450 RPM. This pump is a little dandy. Just what farmers want.

VIKING — *a leader not a follower in rotary pumps.*

For complete information, write for Bulletin SP 479B

VIKING PUMP COMPANY

Cedar Falls, Iowa, U.S.A. In Canada, it's "ROTO-KING" pumps

See Our File in Butane-Propane Catalog

Handle the Heaters that offer the most in Comfort and Convenience

5 sizes, from 30,000 to 70,000 btu., A. G. A. approved. Choice of 2 baked enamel finishes. For natural, manufactured, or LP gas.

Humphrey

GAS FIRED

RADIANTFIRE CIRCULATORS

There's prestige in handling Humphrey — today's top line in the gas heater field.

There's satisfaction, too. Every time you sell one, you feel you've done a good job for the customer.

There's a solid profit for you on Humphrey heaters today, and the promise of a continuously expanding business in the years ahead.

Only Humphrey offers such exquisite styling — such superb engineering.

Only Humphrey provides such valuable service features as exclusive "Toptrol," "Directaire" Counterflow Fan, Full Width Radiants, Full Size Top Grill, etc. All contributing to make Humphrey heaters tops for comfort, convenience, and lasting good service.

Why not decide now to join the family of prosperous, successful Humphrey dealers? Send for our literature today.

GENERAL GAS LIGHT COMPANY

KALAMAZOO, MICHIGAN

EXCLUSIVE "TOPTROL"

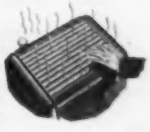
Dial heat wanted with this top knob — no stooping or squinting. As easy as operating a gas range.

"DIRECTAIRE" Counterflow Fan

Diverts up to 50% of warm air to floor level outlet, covering floor with a blanket of heat. Optional with all models.

FULL WIDTH RADIANTS

Humphrey gives more radiant heat from larger, heavier radiants. Approved for either open or closed front operation. Pyrex front panels available.



FULL SIZE TOP GRILL

Has capacity for circulating larger volume of warm air — makes heater more efficient.

THE TRADE

Three key appointments in the management of Minneapolis-Honeywell's Boston division are announced. C. B. HARRISON, formerly manager of Honeywell's regional office at Fort Worth, has been named to the newly created position of marketing manager and will direct sales proposals to military and industrial customers in addition to heading advertising and sales promotion campaigns. J. A. VITKA has been appointed contract administration manager, directing the work on production contracts. W. A. ROTE, formerly chief engineer, assumes the responsibilities of director of engineering, heading research and development, preproduction, product and special engineering activities.

GERRY POWELL is the new sales manager for White-Rodgers Co. He will assume responsibility for the company's field sales force. Previous to being appointed assistant sales manager in February 1957, he was manager of the company's Chicago region. He joined White-Rodgers in 1951.

Gerry Powell
White-Rodgers

James Ruff
Norge

JAMES RUFF has been promoted to director of sales planning for the Norge Division of Borg-Warner Corp. Formerly director of market research, he will now coordinate product development and marketing.

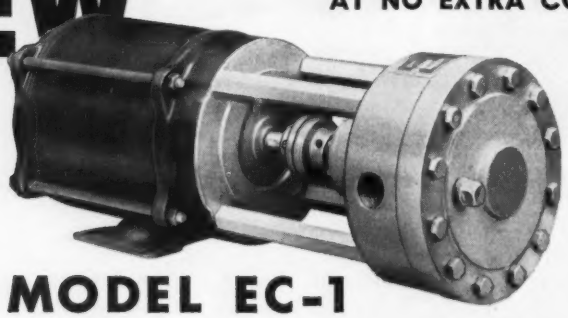
FRANK M. GIRARD has been appointed district sales manager of the Mobile Communications Division of Allen B. Du Mont Laboratories. Mr. Girard will administer and coordinate sales for Du Mont in southern New Jersey, Delaware, and eastern Pennsylvania.

MERLE E. IMUS has been named vice-president and general manager of the bulk commodities operations of Consolidated Freightways. Consolidated transports L. P. Gas among other products. Prior to his promotion, Mr. Immus was general manager of the firm's tanker divisions.

G. C. RICHARDSON, manager of Cities Service Oil Co.'s Supply and Distribution division, has been elected a director of the firm.

WILLIAM B. GILMOUR has been named general manager of merchandising and DARRELL R. NORDWALL, general manager of sales, for the Crane Co. Mr. Gilmour, was associated with Inland Steel Co. for 22 years in various sales capacities and since 1950 was manager of its commercial research division. Mr. Nordwall formerly

NEW NOW UNDERWRITERS' APPROVED AT NO EXTRA COST



MODEL EC-1
LP-GAS PUMPING UNIT

Rated Transfer Capacity, 10 GPM

★ **Competitive low cost**
★ Superior Smith construction
★ Our own patented mechanical shaft seal
★ **Built-in strainer**
★ Built-in bypass valve
★ **Continuous duty motor** with switch and overload protection
★ 10 GPM with vapor line, 7 GPM without vapor line, 75 P.S.I. differential
★ **Easiest to install**
★ Super-hard gears
★ Rugged, heavy-duty, weight uncrated 100 lbs.

Let us help you save money on first cost, installation cost, and maintenance, with this fine pump.

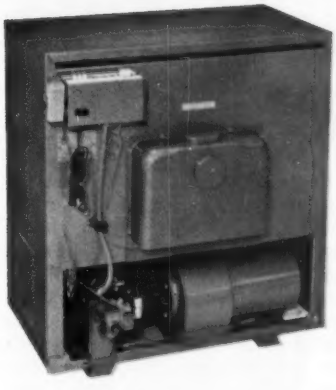
Write: SMITH PRECISION PRODUCTS CO. RYan 12293 and RYan 12691
1135 MISSION STREET, SOUTH PASADENA, CALIF.

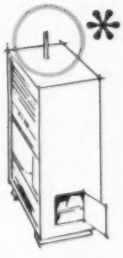
Southeastern Distributor:
Pond-Johnston Inc. Warehouses in Mobile, Ala.; Jacksonville, Fla.; Jackson, Miss.
Western States Distributor:
Teeco Products, Inc., 3920 West Burbank Blvd., Burbank, California.

THE NEW Dearborn® REGENCY

WITH COOL SAFETY CABINET

LOADED WITH SELL





from every angle

Sells on sight because it's obviously better

- **NEW** *TREND SETTING DESIGN* and exclusive Dearborn features make the new Regency vented gas area heater the ultimate in sales appeal.
- **NEW** *EXCLUSIVE CONTROL CENTER* for convenient finger-tip control. Set it and forget it.
- **NEW** *EXCLUSIVE WALL THERMOSTAT* is another Dearborn first — standard equipment with every Dearborn Regency heater.
- **NEW** *EXCLUSIVE THERMO–THRUST BLOWER* thrusts up to twice as much warm air out into the room at floor level.
- **NEW** *WHISPER QUIET OPERATION* with floating power. Motor mounted on live rubber, eliminating vibration and noise.
- **NEW** *COPPERTONE FINISH* decorator-selected to blend with any decor.
- **NEW** *DEARBORN THREE-D SALES APPEAL* — lets you sell in depth, from every angle . . . eases the selling job ahead because the Regency is obviously better.

* ***TRY THIS*** — stand a cigarette on end on top of an operating Regency — it will not tip over — PROOF that the Regency is the quietest and smoothest running heater on the market today.

LPGD

Write for all the data on the new Regency Heater and the complete Dearborn line.

Dearborn®

STOVE COMPANY

1700 WEST COMMERCE • DALLAS, TEXAS

was manager of Crane Co.'s west coast sales district with headquarters at Los Angeles. He moves to the post previously held by W. O. Brown, before his election as vice president for sales in May. ROBERT E. PENNEY, manager of Crane's Los Angeles branch, succeeds Mr. Nordwall as district manager. He will make his headquarters at Los Angeles. Under the realignment of Crane's sales division, F. C. AKERS has been named manager of commercial research and advertising; W. A. BURBINE is manager of heating product merchandising; M. F. DECHATEAU becomes manager of plumbing product merchandising, and C. H. LOVELACE has been named manager of industrial product merchandising.

FRANK W. BEACH has been appointed division engineer for Cities Service Oil Co. at Oil Hill, Kans. He succeeds Wm. H. Cantrell, who was killed in the recent tornado that hit the El Dorado, Kans., area. Mr. Beach joined Cities Service in 1941. He was named assistant district superintendent at Madison in 1948. In 1951, he was transferred to Bartlesville as special engineer.

L. RENE GAIENNIE has been elected vice president of industrial and public relations of ACF Industries Inc. He succeeds Albert L. Kress, who remains a staff vice president. Mr. Gaiennie came to ACF in September 1957 as director of industrial and public relations. His new duties will encompass labor relations, public relations, personnel, wage and salary administration, security, safety and employee benefits. He headed industrial relations for Fairbanks, Morse & Co., Chicago, as director from 1948 to 1954 and as vice president until joining ACF.

STANLEY C. HOPE, president of Esso Standard Oil Co. since 1949, announced recently that he will retire from the company at an early date. He will devote a considerable portion of his time in the future to highway safety, a field in which he has been active in the past through the Esso Safety Foundation.

JACK P. LAWLOR, an eight-year veteran in the appliance sales field, has been named district manager for Chambers Built-Ins. Inc. He will handle Chambers' complete built-in line in Minnesota, Iowa, Nebraska, South Dakota and North Dakota.

VERNON S. WALKER is now steel valve sales representative for Kerotest Manufacturing Co. Territories assigned to Mr. Walker include the states of Oklahoma and Kansas, and a portion of Missouri.

N. T. GRAINER has been appointed midwest regional manager for General Controls Co. He was formerly assistant to the sales manager of the Skokie, Ill., plant.

GEORGE STEVEN has been promoted to general manager of the Compressor & Engine division of Worthington Corp.

MELVIN A. FINUF has been elevated to the position of marketing assistant on the staff of the executive vice president of The J. B. Beaird Co. Inc. Mr. Finuf had been manager of sales and has been with the firm for 23 years in sales, engineering, and production.

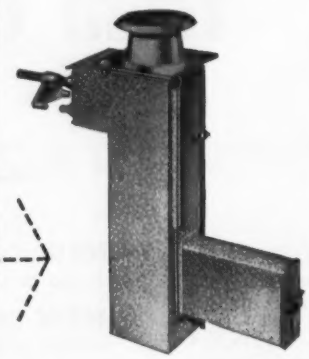
FRANK W. WELDON has been appointed district sales manager for Kelite Corp. Prior to his appointment, he served for 12 years with Oakite Products Inc. He will be responsible for Kelite sales in the Dallas district, comprising northwestern Texas, Oklahoma, southern Kansas, southwestern Missouri, northern Arkansas, western Tennessee and Kentucky, and northern Mississippi.

DAVID H. MCCLAIN has been appointed general manager of Crane Co. branches. He has been administrative assistant for branches since January 1957. A veteran of 29 years with the company, he will be responsible for the functions of Crane branch administration.

DEATHS

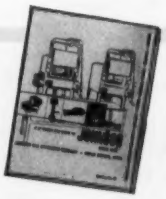
JOHN J. DELANEY, 62, general manager of the Reliance Regulator division of American Meter Co., died June 10 after a brief illness. He served with the division, Alhambra, Calif., for 28 years and had been general manager since 1942. He began his career with the Peoples Natural Gas Co. in Pittsburgh in 1909 and was later associated with the Union Gas Co., Cincinnati; Gulf Refining Co., Houston; General Petroleum Corp., Los Angeles, and Westcott & Greis Inc., Tulsa. He joined Reliance in 1930.

Sell 600 lbs. LP-gas/year



johnson
WATER WARMER

You sell more than an automatic stock tank heater when you sell a Johnson Water Warmer. You sell an average of 600 lbs. of LP-Gas per heater per year. The dependable, weather-proof Johnson Water Warmer is easy to sell, too. Cattlemen and dairymen know their stock do better, profit more, when their water is at a drinkable 48°. And the Johnson Water Warmer maintains that temperature in the coldest weather. It's safe, efficient and very easy to install. Profit twice with the Johnson Water Warmer.



Write for catalog of Johnson's complete water heating line.
JOHNSON GAS APPLIANCE CO.
597 E Ave. N. W.
Cedar Rapids, Iowa

johnson
If it burns gas look to Johnson . . . Since 1901

Aluminum

Metallic Blue

Metallic Green

NOW IN 3 COLORS

Sheffield
gas cylinder paint

Here's an EXTRA that will add excitement to your business! Sheffield has developed this special gas cylinder paint formulation of a METALLIC paint in pastel blue and green in addition to its well known aluminum... and it's great! Takes plenty abuse... and comes up bright and smiling! Available in gallon, 5 gallon and 55 gallon containers.

- FAST DRYING
- HARD SURFACE
- SATIN FINISH
- MAY BE STENCILLED WITHIN 15 MINUTES
- WON'T RUB OFF
- MAY BE BRUSHED OR SPRAYED
- MADE WITH A SPECIAL SYNTHETIC VEHICLE THAT IS INSOLUBLE IN TURPENTINE OR ORDINARY PETROLEUM THINNERS

Sheffield ALUMINUM TANK PAINT

Extensive weather-o-meter tests prove this NEW aluminum paint will resist more than one and one-half years EXPOSURE TO WEATHER EXTREMES! Formulated to do TWO specific jobs... to PROTECT surfaces against rust, wear and corrosion and to add a long lasting attractive finish. Covers all primed surfaces in ONE COAT... economical because it is long lasting! Ideal for Bulk Gas Storage Tanks.

SHEFFIELD BRONZE PAINT CORPORATION

Cleveland 19, Ohio

LET'S TALK LP PROFIT!

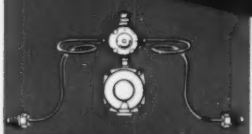
Introducing the 551 LP-Gem personalized regulator by Weatherhead

A brand new model . . .
A brand new promotion idea

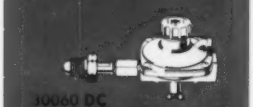
Your Name and Phone Number Here

The NEW 551 regulator carries an individualized dealer business promotion decal — FREE OF CHARGE *with minimum order of 250*

The 551 is available with single or two bottle manifold


30030 DC AUTOMATIC changeover assembly

30070 DC TEE CHECK changeover assembly


30060 DC with POL nut and nipple attached

CHECK THESE SUPERIOR FEATURES

- Corrosion resistant die-cast aluminum construction
- Exclusive molded diaphragm design, with NO troublesome bolt holes and featuring "O" ring-type seal, reinforced relief valve seat area, and positive diaphragm plate location
- Handy mounting bracket
- Heavier wrench pads
- Minimum maintenance
- Attractive, personalized dealer-identification decal for convenient customer reference

Get full details from your nearest Weatherhead Representative or write:

THE WEATHERHEAD COMPANY
CLEVELAND 8, OHIO
The Weatherhead Co. of Canada Ltd.,
St. Thomas, Ont., Canada
Export Division Cable Address WEATHCO

WARRANTY PROTECTION ON ALL WEATHERHEAD LP-GAS PRODUCTS

Leadership
Profit
Growth
® . . . THE WEATHERHEAD WAY

CALENDAR

Coming events in the Industry

1958

September 3-5—Oklahoma LPGA Carburetion School — Oklahoma State University, Stillwater, Okla.

September 5-6—Florida LPGA Annual Convention—The Golden Gate, Golden Beach, Fla. (near Miami)

September 7-9 — Idaho - Nevada - Utah LPGA's (combined) Convention and Trade Show—Newhouse Hotel, Salt Lake City, Utah.

September 8-12—New York State LPGA —Five Service Workshops.

September 9—Pennsylvania LPGA Annual Convention—Penn Harris Hotel, Harrisburg, Pa.

September 12-13—Iowa LPGA Convention—The New Inn, Lake Okoboji, Okoboji, Iowa.

September 14-16—North Carolina LPGA —Washington Duke Hotel, Durham, N. C.

September 15-19—Pennsylvania LPGA —Five Service Workshops.

September 16-October 8—New Jersey LPGA Service Workshops, four consecutive weekly sessions.

September 19-20 — Wisconsin LPGA Convention—Dellview Hotel, Wisconsin Dells, Wisc.

September 22-23—Virginia LP-Bottled Gas Association Convention—Hotel John Marshall, Richmond, Va.

October 5-6—Oklahoma LPGA Convention—Tulsa Hotel, Tulsa, Okla.

October 5-7—Mountain States District LPGA Convention and Trade Show—Antlers Hotel, Colorado Springs, Colo.

October 6-8—New York State LPGA Management Workshop—Cornell University, Ithica, N. Y.

October 9-10—California Natural Gasoline Association 33rd Annual Fall Meeting—Huntington-Sheraton Hotel, Pasadena, Calif.

October 10—West Virginia LPGA Convention—Hotel Stonewall Jackson—Clarksburg, W. Va.

October 13-15—American Gas Association 40th Annual Convention—Atlantic City, N. J.

October 14—New Jersey LPGA Convention—The Ambassador Hotel, Atlantic City, N. J.

October 27-28—Minnesota LPGA Merchandising Conference—Nicollet Hotel, Minneapolis, Minn.

All associations are invited to send in dates of their forthcoming meetings for this calendar.

. . . never had a freeze-up!

. . . standby plant worked perfectly!

. . always have uniform pressure!

. . . heat value is constant!

Customer praise builds business! . . . you'll get it with a MITCHELL VAPORIZER on every installation.

MITCHELL Direct-Fired Vaporizers are available in two sizes to meet the need for *continuous LP gas service* in a variety of commercial and industrial applications. For use with above or below ground LP gas systems, MITCHELL Vaporizers provide a safe, steady, constant-BTU supply of gas uninterrupted by freeze-ups due to temporary over-loads or heavy withdrawals.

Minimum Size Storage Required MITCHELL Vaporizers eliminate the need for oversize storage tanks to meet temporary overload demands . . . hence make possible more compact systems. They are designed for use with all heating, drying or stand-by applications requiring from two to several hundred gallons per hour. (For the larger demands, MITCHELL Vaporizers may be manifolded together.)

Automatic Selective Control MITCHELL Patented "Automatic Selective Control" automatically controls the rate of gas vaporized to equal the rate of usage. It permits vaporizer to supply either generated gas, or storage gas . . . or both at the same time. Simple, positive safety devices (providing overflow and pilot burner shut-off protection) make MITCHELL units safe and reliable.

Simple Installation Installation of MITCHELL Vaporizers is simple and easy; and once properly installed, they will give years of constant, trouble-free gas service. All MITCHELL units have been tested and listed under Underwriters' Laboratories' requirements.

Approved by Factory Mutual Laboratories — FM — Listed by Underwriters' Laboratories — UL

Build a reputation for dependability with MITCHELL VAPORIZERS

Model 30

Provides up to 30 gallons of gas per hour . . . well suited to the small and medium size industrial and commercial applications.

Model 70

Capacity: 70 gallons per hour. This unit is the largest standard MITCHELL Vaporizer. May be used singly or in manifolded combination for large industrial applications

SPECIFICATIONS

Model No.	Ht. (in.)	Dia. or Width (in.)	Depth (in.)	Shpt. Wt. (lbs.)	Rated Input (BTU/hr.)	Wkg. Pres. (psi.)	Pilot Burner (BTU/hr.)	Rated Cap. (gals./hr.)
30	29½	13¼	—	125	30,000	250	1100	30.0
70	39	32	18	460	75,000	250	1100	70.0

JOHN E. MITCHELL COMPANY

3800 COMMERCE STREET • DALLAS, TEXAS

Manufacturers of Fine Machinery for More Than Half a Century

IN PRODUCTS AND TRADE LITERATURE

For further information on items reviewed in this section use the convenient post-paid Readers' Service Cards on pages 83, 84

Personalized regulators

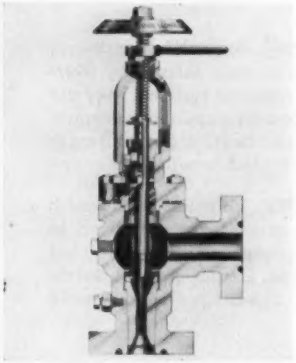
The Weatherhead 551 regulator for bottled gas and small tank service is available with a personalized dealer identification decal listing the dealer's name and telephone number on the cap. It is a newly designed low pressure unit of corrosion resistant die cast aluminum. Mounting is accomplished with a handy one-bolt slotted bracket. The 551 also features the Weatherhead molded diaphragm.

Circle 1 on Readers' Service Card

New formula aluminum paint

An entirely new formula for aluminum paint, developed by Reynolds Metals and available under the Spatz label, cuts down the cost of repainting LPG cylinders and storage tanks. The strontium chromate aluminum paint is claimed to retain its brilliance and heat reflectance twice as long as ordinary aluminum paint; apply a one-third thicker film, and reduce rust. It may be brushed, rolled, or sprayed on.

Circle 2 on Readers' Service Card



Large throttling valve

A large, high pressure throttling valve is being offered by Shaffer Tool Works. Outside threads give corrosion resistance and the stem may be locked at any setting. A pointer and calibration plate indicate the amount of orifice opening. Available in carbon steel, stainless steel, bronze, or aluminum. Manufactured in sizes from 1 to 6 in.

Circle 3 on Readers' Service Card

Utility torch

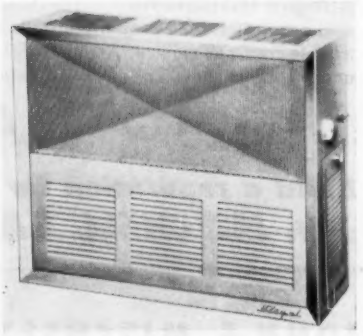
Mutual's L. P. gas utility torch is a portable, lightweight, atmospheric unit designed for general use. Trigger valve provides complete control of flame at all times. Specially designed nozzles are available in two sizes, 6 and 4 ft in length. Weight of 6 ft model is 4 lb. Torch will operate with or without high pressure regulator.

Circle 4 on Readers' Service Card

Gas burner

A new gas burner has been introduced in a new line of Jackson gas water heaters. All air adjustments are eliminated with the Magic Mix burner. The perfect adjustment with which this burner leaves the factory eliminates sooting problems due to improper air adjustment, according to the company.

Circle 5 on Readers' Service Card



Thru-the-wall heater

No ductwork or chimneys are required for the Royal thru-the-wall vented gas heater. Only a 6½ in. diameter hole in any outside

FOR MORE INFORMATION

about New Products in this Issue . . . . .

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September, 1958 • **Void after 90 days**

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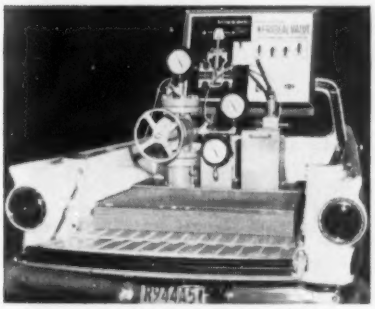
wall is required for the 20,000 BTU model and an 8 in. diameter hole for the 30,000 BTU unit. Royal heaters feature a safely sealed combustion chamber and thin design for mounting to any outside wall, under most windows. Can be delivered with wall thermostat, built-in thermostat, or manual controls.

Circle 6 on Readers' Service Card



Mobile valve demonstrator

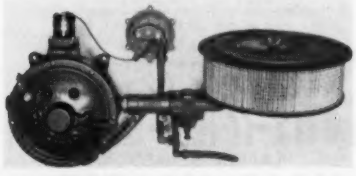
A mobile demonstrator featuring the company's newly developed Keroseal valve has been put into operation by Kerotest. The unit is being utilized as a means to transport the valve to potential points of installation and demonstrate its shut-off feature to those who would actually be working with the product. Observers may open and close the valve under simulated working conditions which should establish the ease-of-operation feature.

Circle 7 on Readers' Service Card

Gas-fired hand-torches

A line of gas-fired hand-torches is manufactured by Selas. Using any commercial fuel gas and any airgas mixing system which will develop the required pressure, the hand-torch produces the desired flame focusing. Five standard sizes provide heat release from 500 Btu/hr to 32,800 Btu/hr.

Circle 8 on Readers' Service Card



Air-cleaner carburetor

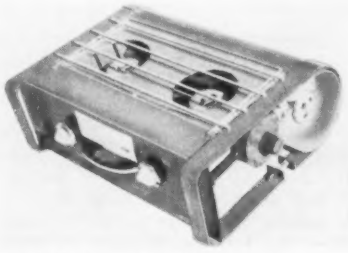
The Ensign Model 758 low profile air-cleaner carburetor is used in conjunction with Model HL vaporizer-regulator unit. The components which include vaporizer, regulator, carburetor, economizer, double throw vacuum switch and solenoid are easily installed with a minimum of connecting hose and fittings. The carburetor is installed on the regular factory equipped gasoline carburetor and is available with adaptors to fit nearly all makes and models of pickup trucks and automobiles.

Circle 9 on Readers' Service Card

Economy power package

An add-on 250/330 watt power package enables users of transmitters in the lower power ranges to upgrade their present systems to as high as 330 watts at half the cost they normally would pay for a complete 330 watt station. GE's Power-Mate may be added to any existing AC FM communications system licensed for higher power, regardless of manufacturer. The lower-powered transmitting equipment already at the user's location becomes the driver stage for the add-on feature.

Circle 10 on Readers' Service Card



Portable cook stove

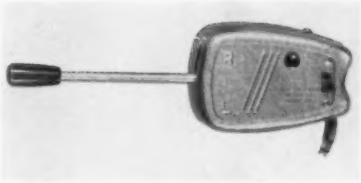
A portable cook stove, complete with a refillable propane L. P. gas tank is offered by Home Gas Equipment. It has two burners (9000 Btu each), regulator, valves and a 6 lb propane fuel tank all in a compact 30 lb package. The refillable tanks hold more fuel than 10 of the disposable or "throw away" type of fuel containers; enough gas to cook meals for 2 people for 10 full days, it is claimed.

Circle 11 on Readers' Service Card

Built-in oven-broiler units

A line of built-in gas oven-broiler units has been announced by Geo. D. Roper Sales Corp. Included in the new models is an oven rotisserie, automatic clock control and Roper's new "jet-speed" oven burner. A motorized rotisserie with "thermo-spit" meat thermometer highlights the custom deluxe model 635.

Circle 12 on Readers' Service Card



Directional signal switch

Betts Machine Co. announces its Model A-1 directional signal switch. Non-cancelling, it is equipped with a flashing pilot light to indicate operation of the signals. A built-in emergency switch operates all four directional signals simultaneously. Furnished with a Tung-Sol flasher, fuse assembly, plastic tipped handle, and adjustable harness to fit steering column, it is available for either 6 or 12 volt systems.

Circle 13 on Readers' Service Card

Summer air conditioner

A self-contained summer air conditioning unit with double air-power design has been developed by the Williamson Co. It flows twice the normal blower capacity through the refrigerant condensing coil, yet employs only one condensing air blower. It may be installed entirely indoors. No field refrigeration connections are needed, no evacuation, no charging.

Circle 14 on Readers' Service Card

Flare stack pilot

A flare stack pilot that features an automatic photo-sensing device for safety control has been introduced by Automatic Butane. Called Ignito-Matic, it has a low fuel consumption of 10,000 Btu/hr, the design of the burner and combustion chamber makes the pilot stable in winds of highest velocity. Pushbutton control instead of electronic control is available. It may be mounted vertically or horizontally.

Circle 15 on Readers' Service Card

Color-coordinated sinks

Caloric has begun production of sinks color-coordinated with its built-in ranges to keep pace with the trend to colorful built-in range installations. The sinks and ranges can be supplied in pastel shades of yellow, blue, green, pink, plus coppertone, black and white to match, contrast, or blend with any kitchen color scheme. Both single and double bowl sinks are available.

Circle 16 on Readers' Service Card

LOOK

14% LESS GAS MORE HEAT

AMAZING *Efficiency* MAKES THE DIFFERENCE

- BROAD BAND floorline delivery; balanced circulation, no ceiling waste.
- INSULATED Cool Cabinet for safety; centralizes heat for Living Zone.
- AUTOMATIC Room Temperature, Safety Pilot & Fan; 100% Safety Shutoff.
- GIANT FAN penetrates room or suite; delivers in volume yet gently, quietly.
- HI-FI Burner for operating economy; gets more from fuel, much more.
- ALL-WELD Heating Section (burner to flue) insures clean, odorless heat.
- MULTI-TUBE Exchanger exposes max. wiping surface to fan action; cuts loss.
- CASTIRON Construction to take Heat Shock; good for lifetime service.
- COPPERTONE Finish with Cafe' panel, Anodized trim; fashion's choice.

THREE POPULAR SIZES
CITY & LP-GASES
A.G.A. APPROVED

New Brilliant Aire '58

Riviera
WINTER AIR CONDITIONER

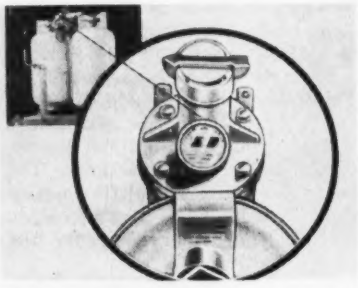
HEATS • CIRCULATES
HUMIDIFIES
FILTERS

WRITE, WIRE, PHONE
THE OHIO FOUNDRY & MFG. CO.
"Quality Heating Since 1846"
STEUBENVILLE, OHIO

450-470 mc radiophones

Motorola's 450-470 mc "T-Power" two-way radiophone utilizes transistors in power supply rather than vibrators. It also features a unified chassis design, which combines transmitter, receiver and power supply portions of the unit on one chassis rather than three. It weighs 34 lb, compared to 74 in former 450-470 mc mobile radiophones. It is packaged in a 30 per cent narrower 10 in. housing, enabling both underdash and trunk mounting.

Circle 17 on Readers' Service Card



Tanks with automatic switchover

Manchester dual ICC tank assemblies are now available with 'Unimatic' regulators. These units provide automatic changeover from the empty to the full tank. When one tank is exhausted a red indicator flag pops up; an indicator arrow always points to the tank in use. A remote indicator plainly visible from the kitchen window is also available.

Circle 18 on Readers' Service Card

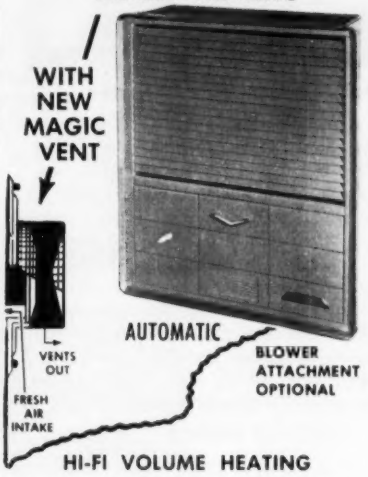
Liquid transfer valve

The Rego A8017A series liquid transfer valve is a combination excess flow and manual shut-off valve for use with tanks having a 1¼ in. NPT bottom opening. The side outlet connection eliminates the use of an elbow. It is especially adaptable to bottom mounting where

Simple as A B C TO INSTALL

*V·O·M SEALED HEATING

WITH NEW MAGIC VENT



HI-FI VOLUME HEATING

Low-level, broad-band, odorless delivery. Compact, styled "thin", mounts on (not in) any outside wall. More convenient than "central heating"; a mere fraction the cost. Fully Automatic; 100% Safety Shutoff. City or LP-Gas. A.G.A. Approved.

Exchanger heremetically sealed. Draws fresh air in, expells burnt gases out via *MAGIC VENT; windproof, weatherproof, pestproof. Castiron burner, dustproof pilot. Features Aluminized Steel construction; "dimpled" to muffle thermal noise. Newest decorator finish (baked); Coppertone cabinet, Cafe' panel, Anodized Copper trim.

Write for SPECS-773

ROOM OR APARTMENT
25,000 & 35,000 BTU

*Patent Applied For.

Vent-(flame)-magic
SAFETY SEALED
WALL HEATER

THE OHIO FOUNDRY & MFG. CO.
"Quality Heating Since 1846"
STEUBENVILLE, OHIO

ROY T. HURLEY

Portrait by Bachrach

"More than 11,000 of our 19,000 employees are now buying U.S. Savings Bonds Regularly"

"We are delighted to see the steady increase in the number of our people who are buying U.S. Savings Bonds through the payroll plan. More than 59% of our employees are now enrolled.

"To enjoy the benefits of peace and freedom, we must provide for our own personal financial security and, at the same time, create the power for peace through support of an adequate defense program. Systematic savings through the Savings Bond program will keep us ahead of any potential aggressor and help insure the soundness of an economic system which encourages and permits each of us to look forward to a bright, secure future."

ROY T. HURLEY, ***Chairman and President, Curtiss-Wright Corporation***

Today there are more Payroll savers than ever before in peacetime. If employee participation in *your* Payroll Savings Plan is less than 50% . . . or if *your* employees now do not have the opportunity to build for their future through the systematic purchase of U.S. Savings Bonds, give your State Director an opportunity to help. Look him up in your phone book. Or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D.C.

BUTANE-PROPANE ***News***

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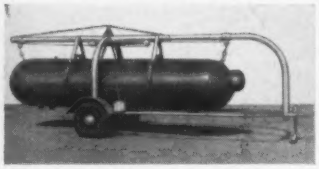
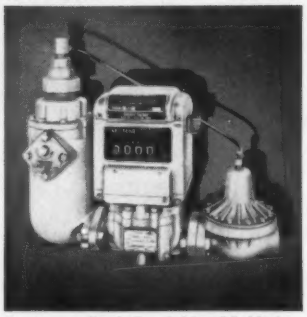
ALL
FINE
PRODUCTS

FISK TANK TRAILER
ONE MAN-HYDRAULIC



The only true "one man" tank trailer on the market. Hydraulic system does all the work—saves muscles, time and money! Frame adjustable to tank length. Transports up to 1260 w.g. Priced within your reach. Provides safe, fast highway travel. Accessories available. Simple to operate, maintain.

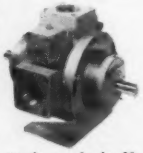
NEPTUNE LP-GAS METERS



Neptune Red Seal Liquid Meter

Liquid metering speeds handling—gives you an accurate record of product dispensed. Stops losses from fraud and overmeasure. Builds customer good will. No extras to buy—three models cover every need. Ask about Neptune Blue Seal Vapor Meters.

NEW! CORKEN "CORO-VANE" TRUCK PUMP



Provides 30-50 g.p.m. dependent on meter capacity. Quickly, easily installed to present piping, power take-off. Ductile iron body with built-in relief valves, flanges. Repairs, without removal from truck, made in 30-60 minutes. Plastic vanes give quiet, trouble-free operation.

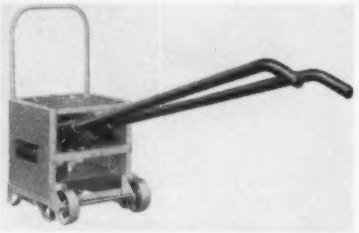
ALSO CORKEN "CORO-VANE" STATIONARY PUMPS

Write for Fine LP Catalog

Fine PRODUCTS CO.
6240 OGDEN AVE
BERWYN (Chicago Sub) ILLINOIS

clearance for a shut-off valve is a problem. Since no extra nipples or elbows are required, installation costs are considerably reduced.

Circle 19 on Readers' Service Card



Low-priced asphalt tool heater

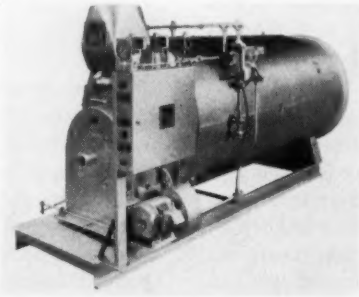
A small, easily handled, low-priced piece of equipment for heating asphalt smoothing irons has been developed by Hauck Manufacturing Co. Called the Mighty Midget, the heater holds two irons and will heat them in one-third to one-half the time required by conventional fire wagons. A split flame LPG burner heats both irons at the same time. A 20 lb LPG bottle lasts about two days.

Circle 20 on Readers' Service Card

Unvented heater series

Ohio Foundry announces a new "Golden Marvel" unvented heater series in three popular radiant sizes (15,000-25,000-35,000 Btu input capacities) and one non-radiant 15,000 Btu size. A "baffled exchanger" built-in above combustion chamber highlights its construction. This device diverts ceiling-bound heat forward.

Circle 21 on Readers' Service Card



Boilers in three sizes

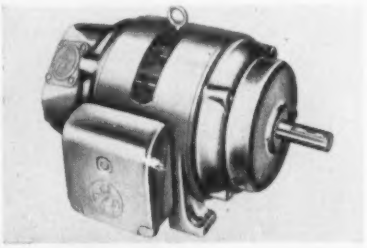
A line of WP (whispering power) boilers rated at 80, 100, and 125 hp are announced by Eclipse. According to the manufacturer these units are available at prices as much as one-third below comparable units. The steamboiler plants are provided as packaged units, ready to be hooked up and on the line producing hot, dry steam with minimum installation requirements.

Circle 22 on Readers' Service Card

Commercial burners

A series of commercial burners for forced-draft firing of gas in medium-size pressurized or natural draft boilers is announced by Iron Fireman. The completely packaged burners are the first of their type on the market for medium-size installations, according to the manufacturer. The burners include a new design burner head that prevents flame pulsation. Only a short stack or vent is required.

Circle 23 on Readers' Service Card



Capacitor motors

A line of heavy-duty capacitor-start induction-run single phase integral horsepower motors designed to provide high starting torque and operating efficiency required for service with pumps has been announced by Fairbanks, Morse & Co. These motors incorporate a number of unique features to insure trouble-free operation under severe operating conditions.

Circle 24 on Readers' Service Card

Automatic weight projection

The "Weightograph," designed and manufactured by Howe Scale Co., projects the actual weight on a large illuminated screen in a nonprotruding, eye-level periscope housing. The indicated weight, figures, and graduations are all projected optically in the same plane, which eliminates parallax and resulting weighing errors, even when readings are made from an angle.

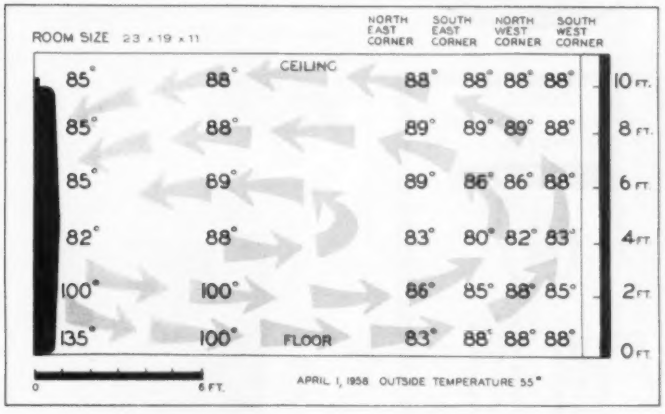
Circle 25 on Readers' Service Card

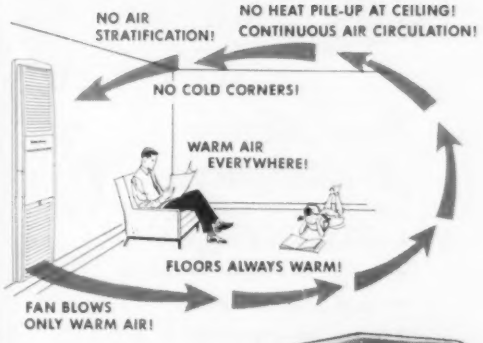
Winter air conditioners

Berger Furnace division of Burnham Corp. has introduced a new BGK series of winter aircon-

Here's Suburban Counter-Flo Proof that will . . .

HELP YOU SELL MORE WALL HEATERS THAN EVER!



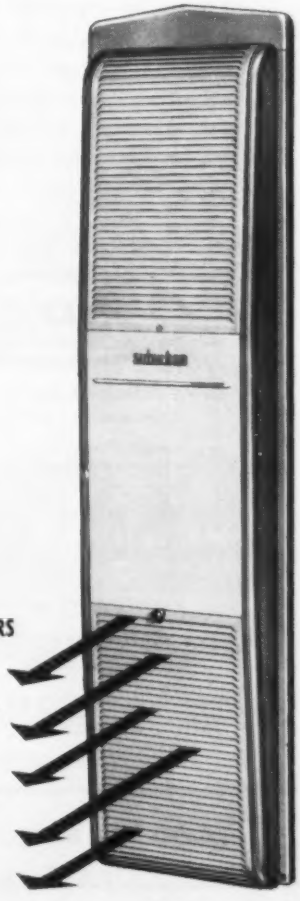


Your wall heater prospects want a wall heater that will heat evenly, throughout the whole room. Now here's proof you can offer a wall heater that *does* heat evenly, the Suburban Counter-Flo. Show this chart to your prospects and increase *your* sales.

Temperature readings above were recorded by thermocouples in fixed positions throughout a 23′ x 19′ room with an 11′ ceiling. The Counter-Flo's continuous warm air circulation caused *floor and ceiling temperatures to be practically the same!* The maintenance of even room temperatures was made even more difficult because the room temperature was raised higher than normal to maintain a wider differential with outside temperature than is usually necessary.

Suburban's Counter-Flo is the one gas wall heater that proves by actual test it maintains even warmth from floor to ceiling! A powerful fan pulls air in through the top grille. Air is re-heated, forced out of the bottom grille and re-circulated to every corner of the room. This *proven* wall heater can mean more sales for you.

Front panel fits between studs for faster installation—automatically fits any wall 4″ to 7″ thick. Only one opening required. Heat exchanger guaranteed for 20 years. 35,000 BTU single wall and 50,000 BTU dual wall models.



suburban **FORCED-AIR COUNTER-FLO GAS WALL HEATERS**

Samuel Stamping and Enameling Co.
Dept. BPN-98
Chattanooga, Tenn.

Please rush me full details on Suburban Counter-Flo. I am a ☐ dealer ☐ wholesaler.

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ADDRESS _____

CITY _____ STATE _____

New! THRU-THE-WALL

VENTED GAS HEATER BY ROYAL®

Save Money Save Space . . .

- No chimney, no duct-work
- No recessing into wall
- No room air used for combustion
- Use on any outside wall
- Save valuable floor space
- Room air fresh as springtime
- Manual or thermostat control
- 20,000 and 30,000 BTU models
- Handsome "thin" design; decorator finish

All Royal Gas Heaters Are Approved By The American Gas Association Testing Laboratories

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For more information

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CHATTANOOGA ROYAL COMPANY
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ROYAL GAS HEATERS FOR EVERY INSTALLATION

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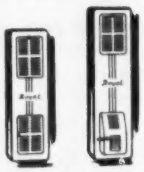
CIRCULATOR



RECESSED WALL HEATERS

UNVENTED

CIRCULATOR

WALL INSERT HEATER

Keep Up with L. P. gas Developments Each Month

BUTANE-PROPANE News

by subscribing to

198 SOUTH ALVARADO STREET, LOS ANGELES 57, CALIFORNIA

See Page 2 for Foreign Rates

☐ Check herewith ☐ Bill me ☐ 1 year $2.00 ☐ 2 years $3.00

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Firm .....

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City ..... Zone ..... State .....

ditioners in the highboy and counterflow models. Highboys are available from 75,000 through 250,000 Btu's and counterflows from 75,000 to 200,000 Btu's both in 25,000 Btu increments. The air conditioners are of a sectional design.

Circle 26 on Readers' Service Card

Leakproof gate valve

A leakproof gate valve which incorporates Teflon seals in the wedge has been placed on the market by Hamer Valves Inc. As the wedge is lowered in the valve to a precision metal-to-metal fit against the seats, the Teflon seals on either side of the wedge compress against the seats to form a double sealing action.

Circle 27 on Readers' Service Card

Industrial crematory

Syrall Manufacturing Co. announces new additions in larger capacity Samco gas-fired crematory industrial destructors. This portable equipment ranges from 5 through 25 bu capacity and is designed for rapid burning with 150,000 Btu input to 300,000 Btu input. Burner assembly consists of automatic 2-hour timer, pilot burner, and 100 per cent safety automatic MR2 thermopilot valve.

Circle 28 on Readers' Service Card

Elevating tail gate

An elevating tail gate known as the Weightlifter powered model mounts underneath a pickup to the truck frame with four bolts. It is 12 or 6 volt battery-electric-hydraulic powered, with the reservoir, pump, valve and control switch all in one unit. It has an 800 lb lifting capacity, and according to the manufacturer, H. S. Watson Co., lifts this load in five seconds.

Circle 29 on Readers' Service Card

D-W WHITEHEAD
DWW

Offers These Advantages

Built in Selling Power

Competitive Prices

Economy of Operation

D.W. WHITEHEAD

automatic

gas

WATER HEATERS

especially designed for

LP GAS

MEMBER NATIONAL LP GAS COUNCIL
LIQUEFIED PETROLEUM GAS
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AVAILABLE EVERYWHERE
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LIBERAL 10-YEAR GUARANTEE

NATIONALLY ADVERTISED

D. W. WHITEHEAD MFG. CORP.
1214 Walnut Ave., Trenton, N. J.

Salamander

An all-purpose heater for contractors, plasterers, painters, electricians, and plumbers, the Flamegas salamander moves heat at 950 cu ft per minute. It can also be used without the fan. It has a directed heat flow and comes in 40,000 to 60,000 Btu models.

Circle 30 on Readers' Service Card

Combination benders

Combination tube benders which bend both hard and soft tubing and handle from 2 to 7 sizes are being offered by the Imperial Brass Co. Sizes of tubing bent range from ¼ to ⅞ in. O. D. The benders make angles up to 180°. Benders for four or more sizes of tubing are furnished in metal kits.

Circle 31 on Readers' Service Card

TRADE LITERATURE

New products information

Two bulletins providing detailed information on American Meter products are now available. Bulletin 101 contains technical data on the "Reliance Temperature Booster Regulator," which raises distribution pressure automatically as the atmospheric temperature drops, compensating for the pressure drop caused by an increased load. Bulletin 308 describes "American Positive Meter Connections, insulated and regular," and gives a complete listing of the connections available.

Circle 32 on Readers' Service Card

Lift truck cylinder guide

The full line of Hackney lift truck cylinders is described in a new bulletin just announced by Pressed Steel Tank Co. The four standard Hackney capacities are 43½, 33½, 20 and 14 lb. propane. The models are available for all popular lift truck makes and sizes, horizontal or vertical installation, replaceable or permanent mounting, liquid or vapor withdrawal, part-time or continuous truck operation or any refueling method.

Circle 33 on Readers' Service Card

Pipe rotators bulletin

Two models of pipe rotators, the "Peck Jr." for pipe up to 5 in. diameter and a heavy-duty model designed for pipe to 36 in. diameter, for welding and flame cutting pipe are shown and described in a 4-page bulletin published by Cecil C. Peck. Reference also is made to the company's emergency service available for developing mechanized welding equipment for production applications.

Circle 34 on Readers' Service Card

Promotional aids package

A humorous "comic strip" color folder, explaining the advantages of L. P. gas, is part of a new promotional aids package Rockwell Manufacturing Co. has made available to all LPG dealers. It also includes six newspaper advertising mats, designed for use in the dealers' local paper, and a four-color 22 x 28 in. window display card.

Circle 35 on Readers' Service Card

Facilities booklet

A full-color, 24-page facilities booklet describes diversified products of Fischer & Porter, manufacturers of flowmeters, process instrumentation, data reduction and automation equipment, chlorination equipment and glass products.

coming right up!
more features
to help you sell . . .

now added to the new *Featuramic*
GAS RANGE . . . the ever popular
GRIDDLE TOP. Just one more quality
extra to help you sell BROWN GAS RANGES.

FOR MORE INFORMATION ABOUT THIS NEW CONCEPT IN COOKING
WRITE

BROWN STOVE WORKS, INC.
CLEVELAND, TENNESSEE

Booklet outlines growth of 20-year-old company. Plans for the future are discussed.

Circle 36 on Readers' Service Card

Winning sales ideas revealed

A 20-page illustrated booklet containing the best ideas for demonstrating the Robertshaw "thermal eye" control is being offered free by the company. Twenty-three prize-winning demonstrations are included in the booklet. They were selected from hundreds of entries in two national contests sponsored by the controls manufacturer.

Circle 37 on Readers' Service Card

Combustion engine literature

Rego has published a new edition of its L-415 catalog covering L. P. gas equipment for combustion engine applications, including lift trucks. The catalog has been increased to eight pages and includes all the latest technical changes and advancements in this type of equipment.

Circle 38 on Readers' Service Card

Cutting torch folder

A complete line of flame cutting equipment is described and illustrated in a six page folder issued by the Linde Co. Torches that can be used interchangeably with every fuel gas combination including oxy-propane are described. The folder covers manual and machine cutting equipment.

Circle 39 on Readers' Service Card

Dehumidification literature

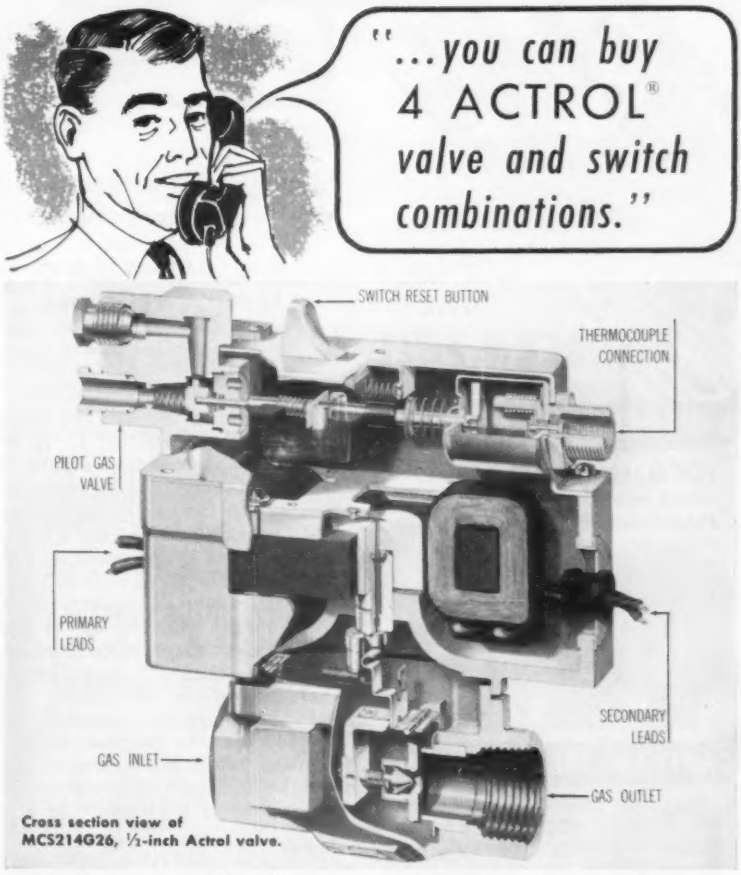
Abbeon Supply Co. offers a bulletin entitled "1958-1959 Facts About Dehumidification for Industrial Plants, Warehouses, Stockrooms and Laboratories and Home Requirements." It shows the latest equipment used to measure humidity and to dehumidify various-sized areas.

Circle 40 on Readers' Service Card

Recessed wall heater brochure

A recessed wall heater sales brochure No. 753-B with corresponding new retail price list No. 583 is offered by Ohio Foundry & Manufacturing Co. Featured is the company's Model No. 500-WFDD (50,000 Btu) recessed wall heater with dual controls.

Circle 41 on Readers' Service Card



Cross section view of MCS214G26, ½-inch Actrol valve.

Select reliable ACTROL® valves for 100% automatic shutoff

Don't overlook the importance of giving gas appliances and customers reliable, dependable protection against pilot burner failures. Your product's fine reputation is guarded when you install Actrol valves by BASO—featuring automatic main burner control and 100% automatic shutoff.

Four Actrol valves for automatic firing of gas appliances offer the reliable ½" Actrol valve in four combinations. They are:

MCS214G26	½" Actrol valve with pilot gas and main burner shutoff; manual resetting.
MCS104G28	½" Actrol valve with automatic re-cycling switch; resets automatically when pilot is lighted.
MCS4G8	½" Actrol valve with manual resetting switch; shuts off main burner gas.
MCV4G8	½" Actrol valve with Baso valve type automatic pilot; shuts off main burner and pilot gas.

The Actrol valve has a built-in, Class 2 current-limiting transformer. Electrical Ratings: Primary 115 volts, 60 cycles, a.c., 6 watts, .056 amperes; Secondary 17 volts. Natural Gas Capacity: 170,000 Btu/hr @ 1" P.D. for ½" Actrol valve.

For more technical information on Actrol valves, *WRITE*...

BASO INC.

Dept. SB-5 • MILWAUKEE 1, WISCONSIN

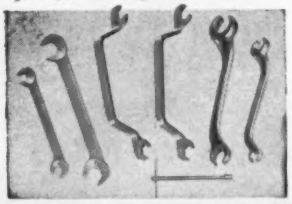
(Formerly Milwaukee Gas Specialty Company)

MODERN SERVICE EQUIPMENT

FOR L·P GAS THE MODERN FUEL

G-4019 SERVICEMAN'S WRENCH KIT

FOR FLARED FITTING RANGES—seven wrenches are packed in Polyethylene Bag



GRIFFOAM LEAK DETECTOR

SQUEEZE BOTTLE APPLICATOR

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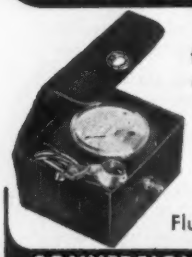
NO BRUSH REQUIRED

AVAILABLE IN PINT & GALLON CANS

G-4046 OVEN TESTING PYROMETER



The modern, fast method for checking OVEN TEMPERATURES

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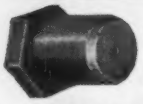
Also perfect for checking Flue Temperatures

CONVERSION ORIFICES AND TOOLS



Many other special items available including Cylinder & Appliance Hand Trucks

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THE E. F. GRIFFITHS CO.

PHILA.44, PENNA

Management principles for day-to-day operations told

By RICHARD WIEGAND
Director Short Courses & Conferences
Georgia Institute of Technology

Representatives from five Southeastern states and 12 L. P. gas companies attended the second annual "LP-Gas Management Short Course" at Georgia Tech on June 23-27. Sponsored by Tech's School of Industrial Management and the Southeastern District of the Liquefied Petroleum Gas Association, the course was set up to help LPG dealers discover management principles that can help them in their day-to-day operations.

In designing the course, it was decided that the program could be of real value to dealers only if the faculty had a thorough knowledge of their problems. As a result, Professor E. R. Bollinger, the course supervisor, spent weeks visiting dealers, examining their books, and surveying their problems. Professor Bollinger was thus able to design an intensive course that would meet the industry's needs.

The program was staffed by the Georgia Tech faculty and all teachers except one were members of the sponsoring School of Industrial Management. W. L. Thomas, who helps direct Southern Tech's Gas-Fuel Technology School, participated in an afternoon session on "Technical Problems Involving Management Action." He then served as host on a tour of Southern Tech's unique facilities.

The management end of the program was covered by examining the various methods of record keeping, the problems of developing standards, and the evaluation of cost problems. Control of service expenses and break-even analysis took up a whole day.

The course broadened into an examination of general principles of personnel management and a study of the personnel problems in LPG companies. Other aspects of management were discussed by lecturers in promotion and advertising and statistical work.

Professor Bollinger had a clear working knowledge of the unique problems faced by L. P. gas dealers. His field research had enabled him to present specific case studies — with actual figures — so that the class could examine management theory and suggest case solutions in a very practical situation.

Present plans call for a continuation of the program in 1959. The program is handled by Georgia Tech's Engineering Extension Division and information on the 1959 Program may be obtained from Professor Richard Wiegand, Director, Short Courses and Conferences, Georgia Institute of Technology, Atlanta, Ga.

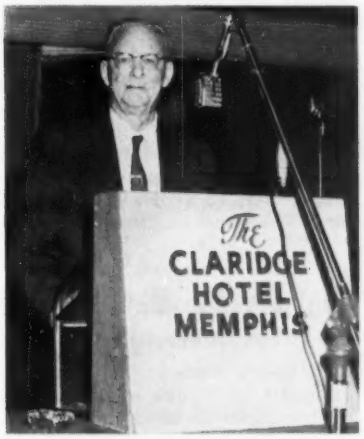
Short Courses, Georgia Tech
Professor E. R. Bollinger, Course Supervisor, points out a profit problem to George W. Martin, Farmers Ice & Fuel Co., Newbury, S. C. (left) and Warren A. Steverson, Esso Standard Oil Co., Myers, S. C.

Elam elected president of Tennessee association

Elbert Elam, Metrogas, Columbia, was elected president of the Tennessee L. P. Gas Dealers Association for the year 1958-59 at the association's annual convention July 13-15 at Memphis.

Vice president is J. Wendell Davis, Tennessee Liquid Gas Co., Dyersburg; and the secretary-treasurer's position is now occupied by Harry Lea, Jr., Lea's Butane Gas Co., Cookeville.

A full program included the last minute substitution of BPN editor Carl Abell for B. T. Harris



Carl Abell, editor of Butane-Propane News, as he presented "The Next Twenty-three Years in the L. P. Gas Business" before the annual convention of the Tennessee LPGA at Memphis.

who was ill. While Mr. Harris, recently retired after 23 years in the L. P. gas business, was to speak on "Twenty-Three Years in the Butane Business," BPN editor Abell spoke instead on "The Next Twenty-Three Years in the Butane Business."

One of the highlights of the convention was "Failure Can Be An Eleven Letter Word," by John Grice, president of the Mississippi association. First day luncheon speaker was Dave Grundfest, Little Rock business executive, who took the convention audience "On Tour of Our Government."

"Achievements and Limitations of Science" was the subject of Dr. Robert G. Lee at the second day's luncheon. The luncheon was preceded by "Play It Safe or Suffer the Consequences," by Dick Dorman, Bastian-Blessing

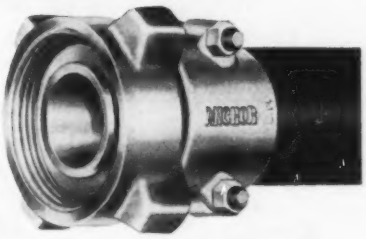
Now

An LPG Dual Hose Assembly with Single Hose Replacement Convenience and Economy

This is a completely new idea in dual hose for LPG Delivery Trucks. Instead of the more costly molded type of dual hose, it consists of a pair of standard Anchor LPG Hose Assemblies joined by Neoprene covered aluminum clips that are slipped over the hose and crimped into firm contact, forming a compact, lightweight dual hose assembly. Replacement of either hose without the other can be made at any time and inventory stock problems are greatly simplified. The New Anchor Dual Hose is designed for use on electrically or manually operated reels, and can be furnished with either pressed on or reusable couplings.

and

A NEW Light Weight, Compact, LPG Loading Hose Assembly



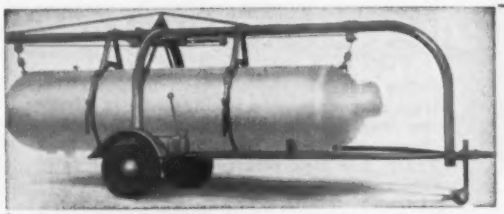
Designed for use on loading racks—delivery and transport trucks and railway tank cars, this assembly has a special 3½" Acme Thread Hammer Union Wing Nut Clamp-Type Coupling at one end that mates with the 3½" Acme Thread Male Adapter used on the filler valve of these trucks or cars. This new coupling is 8" long and weighs 6½ lbs., as contrasted with 18½" and 20 lbs. for the combination of a 2" boss union, 6" male pipe nipple with hammer union end now in general use. It offers a substantial saving in cost, easier handling, and, with the lighter weight, longer hose life.

Andy Anchor says: You can learn all about these two new cost-saving Anchor Hose Assemblies by writing for Anchor Catalog No. 500 which covers the very complete line of LPG Hose Assemblies with Anchor Pressed on, Reusable Clamp-Type, and the new improved Duloc Reusable Couplings for LPG Hose. Write for it today!

ANCHOR COUPLING CO. INC.

399 North Fourth Street, Libertyville, Illinois

Branch Offices: Dallas, Texas, Plymouth, Mich.



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TANK TRAILER

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YES—ONE MAN—CAN FRISK your tanks with a FISK trailer. Simple to operate and maintain. The hydraulic system does all the work. Save muscles—time and money. Fisk will transport tanks up to 1260 w.g.

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Exclusive Features

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and Your Profit Stays in Your Pocket

Your Siegler profits aren't lost in call-backs and complaints. Siegler quality sees to that, and makes every customer an enthusiastic salesman for you.

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THE HIGH PROFIT LINE

THE COMMERCIAL COOKING LOAD IS YOURS

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KEATING

Instant Recovery FRYERS!

The Fryer guaranteed to outproduce all others—gas or electric

The Keating 14" Trump

- ★ Automatic Time and Temperature Control
- ★ Instant Temperature Recovery
- ★ Greatest Heat Input Ever

The Keating Trump is the only high input (80,000 BTU's) fryer approved by the AGA for use with LP gas.

A Fabulous FREE Trial Offer!

Prove to yourself and to your customers—You can't beat a Keating Fryer!

Order Keating Fryers for trial installations at your customer's address. If after two weeks a customer is not completely convinced of the superiority of a Keating Fryer, you may return the fryer for full credit PLUS freight charges—BOTH WAYS!

To learn more about the famous Keating Trump Fryers and how YOU can extend this generous trial offer to YOUR customers, write:

FRYING EQUIPMENT & SUPPLY COMPANY

1210 West Van Buren Street
Chicago 7, Illinois

Co.; and by a rundown on the recent freight discussions by national LPGA's Arthur Kreutzer.

Others on the program included Dale T. Baker, Motorola Communications, on two-way radio; Charles Cornelius, Jr., Tennessee association attorney, on how members can help make laws which affect the industry; and Chester H. Lauck, Continental Oil Co. and a member of the Lum and Abner comedy team, who spoke at the final banquet.

Central States District holds carburetion meet

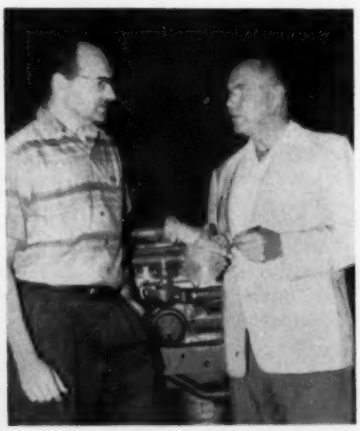
Eighty-seven students attended the "Central States Conference on L. P. Gas Carburetion" at the Kansas State College, Manhattan, Kansas, May 26-28.

This was a four-state area meeting and there were registrants from Kansas, Nebraska, Missouri and Oklahoma.

Engine school held by Iowa gasmen

Fifty-five students attended the June 2-5 L. P. gas engine school at Iowa State College, Ames, Iowa. It was the fifth such instruction course held under the auspices of the college and endorsed by the state LPG association. Supervising the school was Dr. K. K. Barnes, of the college's agricultural engineering department.

According to John E. Kelderhouse, North Central District secretary of the LPGA, students came from seven states and one even



Professor K. K. Barnes (left) discusses the workings of a carburetor with William Ascher, All-Gas Co.

from Osaka, Japan. All phases of LPG carburetion, installation of carburetion equipment and trouble shooting were covered. An added feature was the discussion by college staff members on the advantages of L. P. gas for pig farrowing and crop drying.

The meeting was directed by Carl F. Strub, Jr., chairman of the Iowa LP-Gas Association's educational committee.

Douglas C. Westerhout, association man, available

Due to the recent consolidation of the LPGA West Coast Office and Western Liquid Gas Association, Douglas C. Westerhout, for the past four years executive secretary of WLGA, is available for similar work in another state.

Mr. Westerhout did an outstanding job for the dealers in California and Nevada, particularly in developing and conducting educational programs at the grass-roots level.

If your association needs the service of an experienced man, get in touch with him through BUTANE-PROPANE *News*.

Texas dealers hold Lucky 13th convention

Climaxing 13 years of aggressive and prosperous campaigning for the welfare of the LPG industry in Texas, the Texas Butane Dealers Association met in its 1958 convention and trade show in Dallas June 25-27.

Backed by the outgoing president, Jack Walcher, and other officers under the master-minding of W. J. Lawson, executive secretary of the group since its organization, and Lyle Blanton, chairman of the convention committee, this year's meeting attained the high level of past conventions and brought to exhibiting manufacturers the largest volume of sales from the floor of any year in the nine that the Southwestern Butane Exposition has been presenting trade shows of this nature.

New officers of the association for the ensuing year are president: M. G. Highnote, Canton, Texas: vice president for Region A: M. L. Bussey, Center; vice president for Region B: Lawrence Rothbauer, Hallettsville; vice president for Region C: M. V. Stafford, Corsicana; vice president for Region D: J. L. Weathers,

To sell 'em . . . TELL 'em
WITH THE
LP ADVERTISER

This cleanly designed, modern LP Gas Unit gives you plenty of space to advertise your firm with the effectiveness of a traveling billboard.

It has many functional advantages, too. For example, all fittings are mounted in centralized location in the tank unit. This not only permits faster servicing, but it lets you transfer tank and equipment to a new truck *quickly, easily*. (Yes, a Columbian tank outlasts several trucks!) In addition, the clean, compact design gives your driver better visibility.

LP "ADVERTISER" SPECIFICATIONS:

Compact rear double door cabinet houses all controls and fittings, meter, 150 ft. ¾" hose on power reel. Fully equipped with ICC lights and wiring. Meets all state and federal requirements. Capacities from 1200 to 2500 gal. (Capacities above 2000 gal. should be on dual-axle trucks.)

CALL IN COLUMBIAN!

Columbian's LP "Advertiser" and RFD "Safe-T-Twin" tank truck units are two examples of the ability of Columbian to provide you with the efficient, fast delivery equipment that is a key to profit in the LP Gas business. Columbian makes custom units of any size—semi-trailer transports and delivery trucks—to meet the particular requirements of your business.

COLUMBIAN "SAFE-T-TWIN"

dependable Rural Fuel Delivery

Lets you carry Butane and Propane on same load. Available in capacities to fit your need. (Tanks at right total 1700 gal.) Excellent balance and maneuverability and low gravity center for "off the pavement" deliveries. Fully fitted with pump, meter, printing counter, dual hose reel.

Call in Columbian. Write for specification sheets and quotations, or for an engineering estimate on a custom built unit. Tell us your requirements. Phone or write:

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STEEL, Master-Crafted by Columbian, First for Lasting Strength

1000# LUTHER HYDRAULIC CRANE

Your driver ALONE can load and unload large tanks with ease

- Extra Heavy Duty welded steel construction.
- Fits low on the truck out of the way when not in use.
- Full 360° rotation.
- Easily installed by any welder, garage or your mechanic.
- Discounts to Jobbers and Dealers.
- Crane truck mount and chain $80.00 f.o.b. Pasadena, Calif. Money back guarantee.

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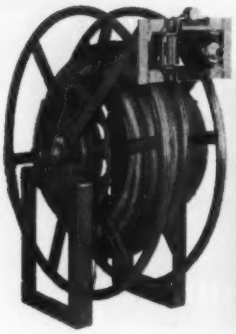
ACE SPRING REELS

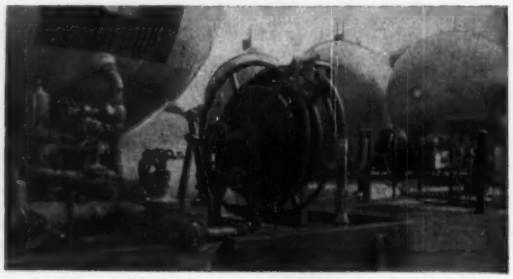
Are Inexpensive to OWN—OPERATE!

- **Original Cost Is Low.**
- **Installation Is Simple.**
- **No Drag On Your Battery.**
- **You ADD Years To the Life of Your Hose.**



SPRING OPERATED MODEL — SERIES 2100
Available for single or double hose on one reel.

For "REEL" Satisfaction — Write ACE Today!



Harry Horn, of Anaheim, Calif., — one of the West's first LP-Gas dealers—has chosen Ace Hose Reels for his fleet of bulk delivery trucks. Shown here is his latest Spring Operated Reel. He recommends them highly for ease and economy of operation.

Series 2100 has many outstanding features:
They conform to all safety rules set up for the LP-Gas Industry . . . All pipe fittings are made of forged steel to comply with NBFU . . . Equipped with high pressure Chicksan Joints . . . High quality steel spring easily rewinds 50 ft. of 1 in. hose . . . Factory lubrication lasts for life of spring.

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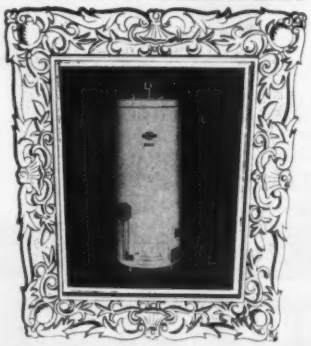

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L-P Gas Hot Water Heater
A.G.A. APPROVED

Available in round 20, 30, 40, 50, and 75 Gallon Sizes. Also Table Top models.

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A training course in LP-Gas for home and group study

"LP-GAS EQUIPMENT AND UTILIZATION"

- A practical course for men engaged in installation, service, fuel delivery, sales, bulk plant work, etc.
- Written for men who want to know the basic fundamentals of LP-Gas.
- New and up-to-date material.
- Not too elementary for the advanced student, yet simple enough for the man with less formal education.
- Available in 10 sections of 8 to 10 lessons each.
- Based on a background of over 20 years in the LP-Gas industry.

GET STARTED NOW

$1.00 will bring you Lesson 1: "LP-Gas and Its Safe Handling"

Write: Earle A. Clifford
INDUSTRY TRAINING SCHOOL
Route 1—Farmington, Maine

Petersburg; secretary-treasurer: Gus J. Moos (reelected), Austin.

Speakers and discussion leaders during the convention included Hon. Olin Culberson, chairman Texas Railroad Commission; Joseph M. Shelton, Glenn Jackson, Gordon McLendon, Jim Tom Barton, Hon. Marshall Formby (chairman Texas Highway Commission), and G. M. Kintz (U. S. Bureau of Mines).

Nickel is new secretary of Illinois association

D. L. Nickel

The Illinois Liquefied Petroleum Gas Association has selected a new executive secretary. He is Donald L. Nickel and his address is 3429 South First Street, Springfield, Ill.

Mr. Nickel has had a wide background of sales experience and attended several Midwestern colleges and universities, graduating from St. Louis University, St. Louis.

His closest connection heretofore with the LPG industry was with the Siegler Heater Co., Centralia, Ill., with whom he served from 1954 to the time of taking up his new secretarial position.

Kentucky convention, show sparked by double program

"Cultivate the Farm and the Home" and "Cultivate Your Industry" were combined to produce a sparkling program which was served up with a 37-booth trade show to all those attending the eleventh annual Kentucky LPGA Convention and Trade Show July 20-22 at Lexington.

Cultivating the farm and home led off with a panel on "Agriculture Today and Tomorrow" featuring Kenneth L. Scott, director, Agricultural Credit Services, USDA; M. H. Holliday, Jr., Farmers Home Administration; Miss Eunice Heywood, Division of Home Economics Programs, Federal Extension Service; and Dr. Ernest J. Nesius, University of Kentucky Agriculture Extension Service.

Second part of the farm and home program was "The Search for 'Miss Future Home Economist

—1958,'" with four college co-eds vying for the title. Winner was Miss Martha Lane Hall, University of Kentucky, who was crowned at dinner that evening. Basis of the judging were essays written by the girls on any phase of the L. P. gas industry and the presentation of a 15 minute demonstration of any use of L. P. gas. The papers were judged in advance by a group of editors including BPN's Carl Abell. Demonstrations were presented as a part of the convention.

A panel discussion on "What is Your Financial Problem?" led off the first part of the program on cultivating your industry. Included were Arch G. Mainous, chairman of the board of Citizens Union Bank & Trust Co., Lexington, on "Why Businesses Fail"; Charles J. Kane, vice president of Citizens Fidelity Bank & Trust Co., Louisville, on "Preparation of a Financial Statement"; and Harry N. Forman, president of National Propane Corp., New Hyde Park, N. Y., on "Practical Financing in the L. P. Gas Business."

Second part of cultivating your industry was the annual business session featuring a forum on appliance sales headed by BPN editor Carl Abell. Also on the program was a beef session on the motor fuel tax law with two men from the Kentucky Department of Revenue taking the beefs.

Rounding out the full program was a buffet dinner the first night with Phillips Petroleum's Frank DeVoe as master of ceremonies and highlighted by the crowning of Sue Lynn Hankins as Miss Kentucky L. P. Gas. The convention also featured a complete ladies' program.

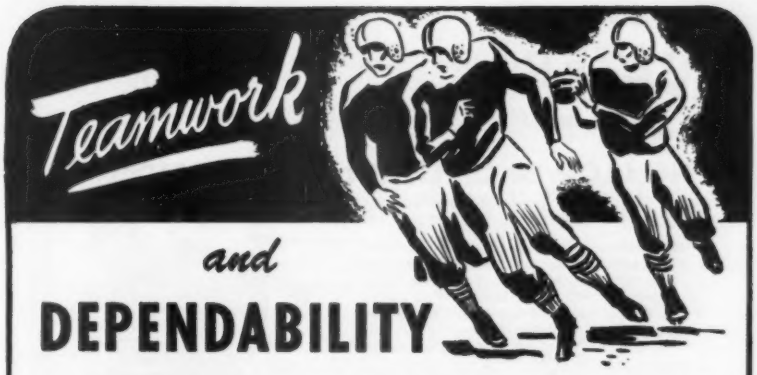
Okla. carburetion school set for September 3-5

An L. P. gas carburetion school, with a touch of weed burning thrown in, is scheduled for September 3, 4, and 5 at Stillwater by the Oklahoma LPGA.

This will be the last school of the year.

Alabama L. P. gas movie almost ready for showing

A 25 to 30 minute motion picture showing the many uses of L. P. gas and including testi-



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GENERAL L-P GAS TANKS

20 lb.—40 lb.—60 lb.—100 lb. Cylinders

Complete Line of Accessories for Single or Double Hook-ups . . . Regulators—Valves—Racks—etc. Everything that is needed for complete Bottle Gas Installation.

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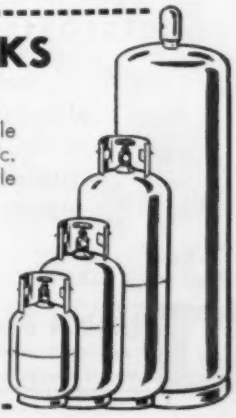

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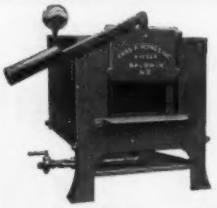
INDUSTRIAL GAS EQUIPMENT
BURNERS & FURNACES (Heat Treating, Melting, Soldering)

NO BLOWER OR OTHER POWER NEEDED
. . . just connect to gas supply!

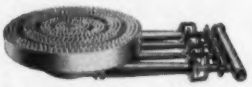
Outstanding service since 1911! Each unit, with the famous "BUZZER" Venturi, delivers the hottest, quickest heat attainable without a blower. Full range control of heat and turn-down. Standards or specials available for manufactured, natural or liquefied gas applications.



PIPE BURNERS for even heat distribution in any capacity.

BENCH TYPE OVEN FURNACES for heat treating and pre-heating — temperatures to 2000° F.

NOZZLE BURNERS for all capacities up to 1¼ million BTU's.



RING BURNERS for all capacities up to 500,000 BTU's.

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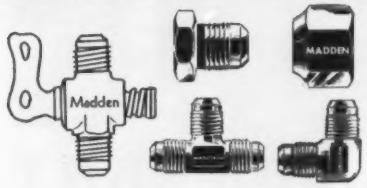

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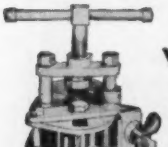

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SEALING COMPOUNDS

Heat and vibration-proof, non-solvent, will not shrink, crack or crumble. Makes all assemblies leak-proof and pressure-tight. Prevents rust, corrosion, joint seizure.

7 BASIC BLENDS

LIQUID WRENCH®
The super-penetrating rust solvent

LOOSENS
rusted bolts, nuts, screws, 'frozen' parts

Liquid Wrench works *fast*... yet is absolutely safe for all metals and alloys.

2171

At Industrial, Automotive, Hardware, Plumbing Jobbers

SOLDER SEAL

RADIATOR SPECIALTY CO.
Charlotte, North Carolina

monials from users will soon be available to members of the Alabama LPGA. The film has been prepared by the Association in conjunction with an advertising agency.

Out of state LPG dealers and other associations will be able to purchase copies of the film, which is reported to apply to LPG operations anywhere in the nation.

The film will be narrated by Delta Tank Manufacturing Co.'s Max Fetty.

Virginians show firemen how they fight fires

When 1500 members of the Virginia Firemans Association met in Staunton, Va., recently in a three-day convention, they were given a series of live fire demonstrations by special delegates of the Virginia LP-Bottled Gas Association under the direction of President Dennis C. Earhart, Dixie Gas Co.

Leonard Lemon, Bastian-Blessing Co., monitored the demonstration, with the assistance of Mr. Earhart, Bobby Lockridge, also of Dixie Gas, and Moylan E. Brown, LPGA district secretary.

The demonstrations were prefaced by word pictures of what was to occur and a description of the characteristics and applications of propane gas. Different types of controlled, simulated propane fires were started and different types of extinguishing agents and apparatus were shown.

E. Wissing, LPG operator, passes away in Kansas

Ernest Wissing, owner and operator of Wissing's Metered Gas Inc., Salina, Kansas, passed away in that city on May 3. He had been identified prominently with the L. P. gas industry in Kansas for many years.

Mrs. Wissing and son, Robert, are continuing to operate the business.

Mississippi safety meet attended by 550 employees

The importance of safety conferences and the interest among LPG dealers was well attested at six June meetings conducted by the Mississippi LP-Gas Dealers Association. Five hundred fifty route salesmen and servicemen were in attendance at one or more of the demonstrations, which were

Yes, now there's a Suburban Novent and Dynavent gas heater that fits between wall studs, **without framing** . . . that needs no flue or chimney . . . that's sized for bedrooms, motel rooms, private offices, and other areas that need heat . . . that rounds out the versatile line of Suburban Novent and Dynavent gas heaters which are economically solving heating problems everywhere . . . that are available with either built-in temperature control or wall-thermostat.

NEW 20,000 BTU MODELS HAVE EVERY FAMOUS SUBURBAN NOVENT-DYNAVENT FEATURE

SAVE UP TO 30% IN FUEL COSTS

Approved by AGA, Leading Utilities and LP-Gas Groups.

Also available in 35,000 and 45,000 BTU models.

For complete details, write to:
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SUBURBAN APPLIANCE COMPANY

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Need more Payload without Extra Weight?

Then You Need a Trinity T-1 Transport! With the same maximum loaded weight, T-1 increases payload by 12% each haul over the old lower tensile steel transports . . . pays for itself in one season!

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TEXAS
1250 W. G. Delivery Unit and International Truck
1300 W. G. Delivery Unit and GMC Truck
1500 W. G. Truck Delivery Unit
1400 W. G. Truck Delivery Unit
4000 W. G. Twin Transport

ILLINOIS
5600 W. G. Transport
5500 W. G. Transport

IOWA
5600 W. G. Propane Transport

MISSOURI
5100 W. G. Twin Transport
5500 W. G. Twin Transport
1424 thru 1775 W. G. Delivery Units and Trucks
1250 W. G. Twin Delivery Unit and Ford Truck
1212 W. G. Single Delivery Unit and Chevrolet Truck

KANSAS
5200 W. G. Twin Transport
7065 W. G. Propane Transport

NEW MEXICO
2200 W. G. Truck Delivery Unit

ARKANSAS
5900 W. G. Propane Transport

WISCONSIN
1500 W. G. Twin Delivery Unit & Red Truck

ALABAMA
7000 W. G. Neck Down Transport

ARIZONA
6100 W. G. Twin Transport

MISSISSIPPI
4890 W. G. Twin Transport
3800 W. G. Twin Transport
4832 W. G. Twin Transport

No charge for this listing service

We invite anyone wanting to buy, sell or trade for Dallas LPG Equipment to use this column without charge. Simply write 50 words or less, clearly and send your advertisement in to R. A. (Dick) Martin, Dallas Tank Company, Inc., Dallas 22, Texas.

Dallas Tank assumes no responsibility for used equipment or any transaction or representation other than new Dallas Tank Equipment.

Write, Wire or Phone:

Attn.: R. A. (Dick) Martin

TWENTY-FIFTH ANNIVERSARY
1933 1958
DALLAS TANK COMPANY INC.

P. O. BOX 5387 • DALLAS 22, TEXAS

Watching Mottier Siebenthal, Bureau of Mines, prepare for his demonstration, "The Magic of Fire" which he presented before the six safety conferences are (left to right): John A. Grice, president of the Association; Jones Robertson, Gas Equipment Supply Co.; C. D. Pritchard, Jackson, Director Liquefied Compressed Gas Division; Mrs. Jessie Magee, executive secretary; D. C. Trexler, director, Dept. of Conferences and Institutes, University of Miss.; Mr. Siebenthal; Jim Ulmer, Columbia; Frank Blossman, McComb and James Magee, Tylertown, members of the committee in charge of the McComb, Miss., meeting.

held at Oxford, Greenwood, Starkville, Jackson, McComb and Hattiesburg from June 9 through June 20.

Joining with the Mississippi association was the Department of Conferences and Institutes, University Extension, of the University of Mississippi, in this first annual safety conference. Its exceptional success has already prompted plans for similar ones next year, according to Mrs. Jessie Magee, executive secretary of the association.

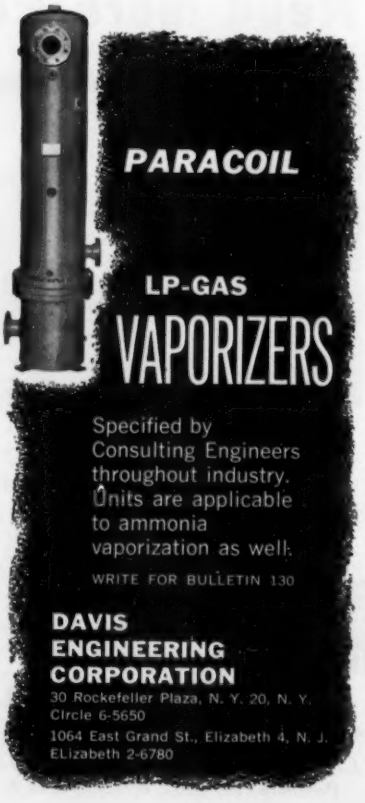
Safety records have improved everywhere in the country when drivers and servicemen attend this kind of demonstration, and by spreading the meetings over six different localities in the state, many more men were able to take advantage of them than would have been possible if held only in one location.

John A. Grice is president of the Mississippi LP-Gas Dealers Association and Lewis Graeber was the chairman of the six committees where the meetings were held. The local chairmen were Bill Lyles, Max Harper, John Fair, Earl Hanna, James Magee and Dewey S. Dearman.

S. F. Wikstrom named director of PAR Plan

S. F. Wikstrom, director of promotion and advertising for the American Gas Association since 1955, has been named director of the Association's PAR Plan (promotion, advertising and research). His appointment, which was effective August 1, is one of five PAR promotions announced by C. S. Stackpole, AGA managing director.

Today's most deadly weapon is a misguided car.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20 lb. cyl. with valve	$ 8.45
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Cap for above	.70
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20 lb. plumbers type cyl. with valve	12.25
33⅓ lb. lift truck type cylinder, fitted, less quick coupling	25.95
43⅓ lb. ditto	26.70

These are 25 lot prices. Write for prices in other quantities. Cylinder prices are FOB Speedway, Indiana. For FOB Cleveland, Ohio add 4%.

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2 cylinder outfit complete with T check and 2 pigtails. Rego #5713S 20 per carton $4.29 each.

Automatic regulator outfit, with 2 pigtails.

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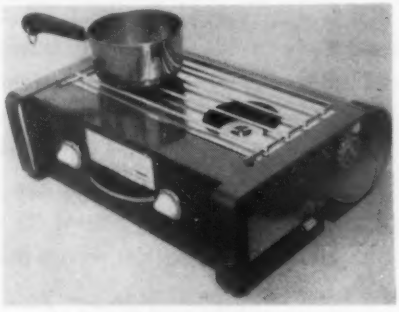

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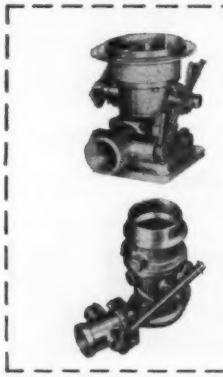

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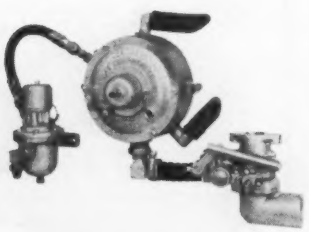

CENTURY

LP-GAS CARBURETION

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Drivers should know the answers to at least the first 15 questions. Service mechanics should know them all. Rate yourself by scoring 5 points for each correct answer. Answers begin on the following page.

QUESTIONS

☐ 1. How much should an LPG carburetor be "choked" for a cold start?

☐ 2. How long should the "choke" be used after the engine begins to fire?

☐ 3. When you have overchoked (flooded) the engine, what is the easiest way to get it started?

☐ 4. What is the purpose of the tank valve marked "vapor" that is connected into the liquid fuel line? (ICC type tanks do not have this valve.)

☐ 5. What are the necessary steps for starting on vapor during very cold weather?

6-7-8-9 (5 points for each part)
What causes frost or an "ice ball" on the regulator under the following circumstances, and what should you do in each case?

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☐ **6.** After the engine has been stopped for a considerable period.

☐ **7.** When the engine has been put to work immediately after starting.

☐ **8.** When the vehicle has come down a long hill after a period of apparently normal engine protection.

☐ **9.** After one or both water lines have been disconnected from the regulator or the water has been lowered in the radiator.

☐ **10.** When the engine shows signs of a lean mixture on a pull and you know there is plenty of fuel in the tank, what are the three possible causes?

☐ **11.** When the liquid fuel valve at the tank has been turned on following service work on the fuel system at the engine, and no fuel comes through, what is the cause and the remedy?

☐ **12.** When is it proper to fill the fuel tank "right to the top?"

☐ **13.** In filling the fuel tank, how do you prevent the liquid level from becoming too high?

☐ **14.** Why is it not advisable to allow a jet of escaping liquid LPG to strike your skin, as when disconnecting a filler hose or opening the carburetion system?

☐ **15-16.** (5 points for each section)
How can you protect yourself from the above trouble?
☐ a—When disconnecting the filler hose.
☐ b—When getting into the carburetion system.

☐ **17.** When you suspect that an LPG carburetion system is not working properly, what is the first thing you should check?

☐ **18.** Should LPG ever be allowed to escape in a garage or partly closed shop? Why?

☐ **19.** If you must empty the fuel from a carburetion system and the engine can not be run, where should this be done?

☐ **20.** What should be done before removing any valve or fitting from an LPG tank?

ANSWERS

1. As little as possible. After the fuel tube from regulator to carburetor is completely filled with fuel vapor, the mixture is right and any more choking will only "flood" the engine. If the fuel tube slopes up from the regulator to the carburetor (the ideal condition), most systems will start in warm weather without choking, and with very little in cold weather. Open the throttle from one fourth to one third to help get the fuel moving, except on jobs equipped with vacuum safety switch wired in series with LPG solenoid valve at vacuum shut-off in regulator.

Several makes have no choking or priming mechanism. Enough fuel to support idling starts to flow as soon as the ignition switch (controlling the solenoid fuel valve) is turned on. To start, turn on switch and engage starter, counting to see how many seconds before engine fires. After that, turn on switch, count off the seconds, then engage starter.

Other makes (Algas, Century, Dix, etc) have primers on regulator which cause flow of fuel. Do not use this when engine is warm. On cold starts hold primer open for two to three second intervals while cranking, until engine fires.

Ensign is an exception — the "choke button" closes the regular carburetor and opens a miniature carburetor used only for starting. Pull choke button all the way out, and start engine. As soon as it is firing regularly, push choke button all the way in.

2. Discontinue choking or priming as soon as engine fires regularly. By that time, the mixture is as "right" as it will ever be.

3. The quickest way to get a flooded engine started is to disconnect the fuel tube at the carburetor, open the throttle wide, and spin the engine with the starter long enough to pump the fuel in the manifold through the engine. Reconnect the fuel tube, and normal starting should take place. The next best bet keeps your hands clean but is harder on the battery—open the throttle wide and use starter to clear excess fuel out of the manifold. It takes longer because more fuel is coming in through the carburetor with the air.

4. The vapor service valve is on the ASME type tank to provide prevaporized fuel for starting in cold weather. It should be kept closed except when making very cold starts, or when used in connection with a Clark automatic tank pressure regulating valve.

5. Obviously there is nothing to be gained when the vapor valve is opened for a cold start and the fuel line is already full of liquid. When stopping the engine in weather cold enough to need vapor starting, close the liquid valve at the tank and let the engine run till it dies. That uses up the liquid fuel in the line and enables you to supply straight vapor by opening the vapor valve. Start the engine and let it warm up at a fast idle long enough to put a little warmth into the regulator. Then open liquid valve, close vapor valve, and go on operating.

6. A frosted or iced regulator after the engine has been shut off for quite a while has only one cause—leaking fuel. If you find one like this, better not try to start the engine. There might be enough loose gas around the engine to ignite. Fix the regulator first if possible. If you can smell gas under the hood, fix the regulator first anyway.

7. This is caused by putting the engine to work too soon after the cold start. There isn't enough heat in the regulator yet to offset the refrigerating action caused by vaporization of that much fuel. Warm the engine up enough to get the lube oil up to good fluid temperature before making it pull, and you will avoid the freeze-up as well as make the engine last longer.

8. The radiator water gets too cool on the long deceleration to do its stuff in the vaporizer. No harm done unless the regulator valves stick on account of freezing moisture in the fuel. In that case, you coast over to the side of the road and wait for the regulator to thaw.

If chronic, get larger vaporizer or install radiator shutters.

9. This is generally due to air lock (a trapped pocket of air) in the vaporizer passages which prevent flow of water through the shell. Disconnect water outlet hose from vaporizer and operate engine until full flow is established.

10. The carburetor is not getting enough fuel. Look for clogged filter, bruised or flattened fuel line, or are you operating on the vapor valve? If the fuel line is encased in loom, you can locate restrictions by running your fingers along the loom. If you locate a cold spot, it is on the engine side of the restriction.

11. That's what the excess flow valve back of the service valve does when the service valve is opened too fast on an empty fuel line. To open the excess flow without disassembling the tank, close the service valve and wait one minute for pressure to equalize through the excess flow valve, and allow it to drop open. Listen for the click when it opens. If you do not hear it, strike the tank a sharp blow with something soft. Then open the service valve just a crack, and wait. You should let the line fill with liquid slowly, after which you can open the valve the rest of the way as fast as you like.

12. There's just one word in this answer—NEVER.

13. There must be a vapor space in the upper part of the tank to serve as a cushion in case the liquid fuel in the tank warms up and expands. The fixed liquid level gauge in the tank (sometimes called 10 per cent valve) has an extension tube that ends where the vapor space should begin. When filling the tank the control screw of this valve should be opened just enough so a good ear will pick up a slight hiss as vapor escapes through a tiny hole in the valve body. As soon as the liquid level reaches the end of this tube it comes through the valve opening as a little streak of white fog. That's the signal to stop filling right now.

14. Because of rapid evaporation, this escaping jet is extremely cold. It can freeze skin almost instantly. This has about the same physiological after-effect as a burn.

15. Substantial leather or rubber gloves should be worn while disconnecting filler hoses.

16. When getting ready to disconnect any unit in the carburetion system where liquid might escape, it is best to close the fuel valve at the tank and run the engine until all liquid fuel in the line and regulator is used up. If this cannot be done, close the fuel valve and loosen the line fitting at the regulator very carefully, keeping hands well away from the point of opening. When the gas starts to escape, back off and wait for all pressure in the line and system to be dissipated. Never do this indoors. See Answer 19.

17. More than 90 per cent of all suspected carburetor trouble is not in the carburetion system at all. It is in the ignition system. Check the ignition first, and get it in top condition. If there is anything wrong in the ignition, you cannot tell when you get the carburetion system right anyway. It saves time and "comebacks" to fix the ignition system first.

18. L. P. Gas should never be allowed to escape in any closed structure, or in any partly closed structure unless it is both fireproof and ventilated at the floor line. Even then it is permissible only in very small quantities. The reason is that LPG vapor is heavier than air (propane, x 1.55; butane, x 2.07) and under some conditions will form combustible pockets of gas-air mixture. This would make a serious fire hazard in a shop or garage, as it could become ignited from an arcing electric switch, the brushes of an open electric motor, sparks from a grinder, or any open flame.

19. This should only be done in the open air, at a location as far from public streets, buildings or sources of ignition as possible. We hope there will be a breeze, and that it will not carry the escaped vapors into the open shop door or into any other building. And take it easy—don't let it all out at once. It is much safer to have it escape gradually so it can be completely dispersed in the atmosphere at once. Big slugs of gas always contain flammable areas, which are a hazard until they become dispersed and diluted with air until they are "too lean to burn."

20. All pressure should be removed from the tank. This requires the removal of the fuel until the tank pressure reaches atmospheric. A few LPG plants have facilities for emptying containers without losing the product. If there is no way to do this locally, the tank should be taken to an open field, bled off through the vapor valve, and the gas burned as it emerges. NEVER discharge large amounts of L. P. gas in the open air, and leave them to drift into trouble.

Of course there are many other things that drivers and mechanics should watch in their work with LPG carburetion. Some of them are the same as are recommended with gasoline engines, while others are just plain common sense. For example, radiators should be kept full, the crankcase oil should be at the correct level, spark plug gaps should be reset from time to time so they will not become too wide, the engine should not be abused, particularly the engine should not be lugged down just because it will pull smoother at lower speed.

And L. P. gas should never be used for cleaning clothes, cooling drinks, spraying paint, blowing air horns, inflating tires, or clearing out plugged sewer lines. Just because it provides pressure is no reason why it should be used instead of compressed air. Any of the above uses are risky—they might produce a fire which would certainly be avoided if compressed air were used instead.

LPG is a wonderful engine fuel. Why not use it for that and get along without these needless hazards? And lest we forget—NO SMOKING anywhere near a place where tanks are being filled or LPG carburetion systems are being worked on. ■

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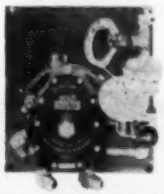

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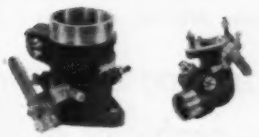

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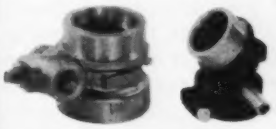

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CARL ABELL, editor of BUTANE-PROPANE *News* and author of the *Butane-Propane Power Manual*, discusses . . .

Handling operating problems of L. P. gas engines

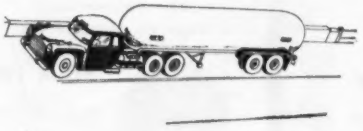
Part five

ONE of the few symptoms that gives immediate indication of trouble in the fuel system is the appearance of frost on the regulator when the engine has been standing cold. This is evidence of a leak, either through the final regulator valve, or through a punctured or ruptured regulator diaphragm.

If the fuel is escaping through the final regulator valve into the fuel tube, the mixture will probably be too rich to burn, and since there may be a hazardous amount of escaped fuel under the hood, no attempt should be made to start the engine until the leak is stopped. And be sure that there is no source of ignition in the immediate vicinity until the leak is corrected.

Such a leak will occasionally be caused by the lodgement of a small piece of dirt, rust, or scale from a copper tube, between the edge of the orifice and the valve seat, in the primary regulator valve. If this obstruction has not become embedded into the plastic seat, it may sometimes be blown out by opening the regulator valves with the primer, or by blowing into the regulator balance hole if there is no primer on the regulator. (A soft rubber tube should be kept available for this purpose.)

The gas tube between the regulator and the carburetor should be slipped off at the carburetor end while this release of fuel takes place, to avoid filling the manifold, which would make it very difficult to start the engine after the correction has been made. A quick check with a film of soapy water over the open end of the fuel tube will tell whether or not



the obstruction has been removed. If not, it will be necessary to open the regulator and replace the seat.

Complete stoppage of fuel will make it impossible to start the engine, while partial stoppage may permit starting, but will prevent full power operation, and may even cause the engine to die.

These conditions are diagnosed by installing the low-reading pressure gauge in the connection provided for that purpose in the regulator housing. This indicates the pressure existing in the reservoir

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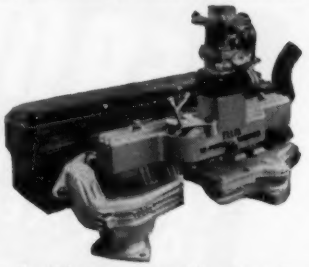

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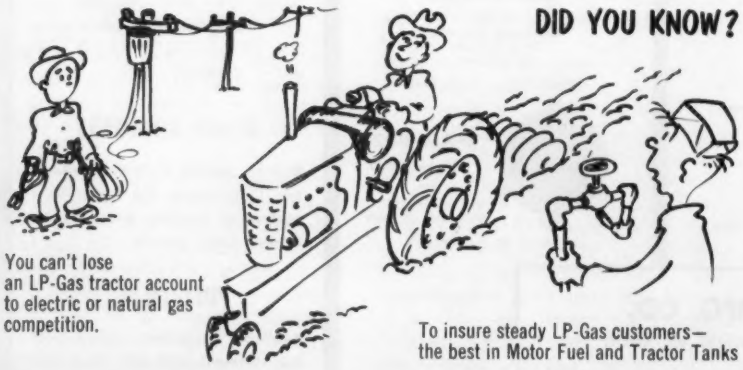

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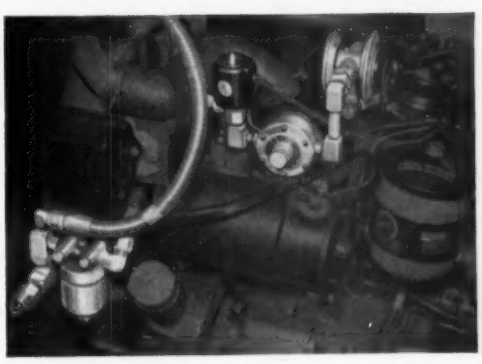

The Best Known Is Best To Sell—Zenith is the oldest and most experienced manufacturer of industrial engine carburetors. This experience has been applied to LP-Gas Systems to deliver all the advantages of this fuel.

Clark, a foremost manufacturer of materials handling equipment, now offers a complete line, with capacities from 2,000 to 5,000 lbs. using Zenith LP-Gas Systems. Zenith Conversion Units are for all makes and types.

OUTLINE OF UNUSUAL OPPORTUNITY:

Zenith LP-Gas Conversion Systems for materials handling equipmentt offer exceptional profit possibilities . . . Here are facts—*

1. **Materials handling equipment powered by LP-Gas has increased tremendously.**
   a) Demand last year reached all-time peak—and is still growing.
2. **Much of this demand is being met by converting present units to LP-Gas.**
   a) Conversion installations are quick, easy and profitable to make.
3. **Profit is attractive 2 ways:**
   a) Zenith conversion units give trouble-free performance—keep operators satisfied.
   b) Every unit provides additional fuel customers!
4. **Zenith, leading manufacturer of industrial carburetion for many years, applies this experience to its LP-Gas conversion units.**
   a) Zenith conversion units are for all makes of lift trucks, tractors, and industrial engines.

Get the complete story. Write us now for information on conversion units for materials handling equipment. LP-Gas Sales Department, Zenith Carburetor Division, 696 Hart Avenue, Detroit 14, Michigan. *Reg. U. S. Pat. Off.

Zenith Carburetor Division

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WESTERN TANK QUALITY

Has been proven by the many WESTERN TANK firsts which are now standard in the industry.

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MOTOR FUEL & TRACTOR TANKS
WESTERN TANK AND STEEL CORP.
LUBBOCK DALLAS

Fully-Illustrated, Installation Catalog . . .
and weekly stock lists are available from your Western Distributor — Write for his name & address.

TABLE 3. CORRECT REGULATOR PRESSURES FOLLOWING PRIMARY REDUCTION, FOR VARIOUS LPG CARBURETION SYSTEMS

Make	Model or Series	Pressure, psi
Algas	1500	6 to 8
Algas	940	3 to 4½
Algas	1083	3½ to 5
Algas	1200	2 to 3½
Beam	400	4 to 5
Century	M and K	No test port.
Climax	all	15
Cyclone	all	8
Dix		2 to 4
Ensign	W, R, and S (without oil control)	4
Ensign	W, R, and S (with oil control, engine dead)	1
Ensign	W, R, and S (with oil control, engine running)	10
Ensign	M and HD	8 to 10
Garretson	up to 75 hp. engine,	7 to 10
Garretson	75 to 100 hp. engine,	10 to 12
Garretson	100 to 125 hp. engine,	12 to 16
J & S	1 psi. for each 40 cu. in. of engine displacement.	
Marvel-Schebler	(formerly Roadmaster)	3 to 4
National	100	3
National	all other	5
Powermaker	Frundell	¾
Roadmaster	UT-C-600	3 to 4
A. O. Smith	(formerly Hughes)	5

space between the first and second regulator valves. This reading should fall within the correct range for that particular regulator, as shown in *Table 3*.

The reading of the gauge should remain within the prescribed limits with the engine running. The reasons for this become apparent when one considers that the pressure in the regulator at this point corresponds to the pressure at the outlet of the fuel pump in a gasoline fuel system.

A reading that is higher than normal indicates either a leaking first stage regulator valve, an improper adjustment of the regulator, or the remote possibility that the primary regulator valve spring is of the wrong calibration, or has been weakened in service by corrosion.

A low reading, with the engine dead, shows stoppage of fuel. This might be caused by an empty tank (it has happened), closed tank valves, flattened fuel line, clogged fuel filter, or the closing of the excess-flow check valve in the tank, which is sometimes caused by opening the liquid outlet valve too quickly when a high pressure differential exists between the tank and the fuel line.

The cure for empty tanks and closed valves is self-evident. When a fuel line becomes flattened or crimped, it should be replaced, or repaired by cutting out the damaged portion and replacing it with a section of good tubing. Flared fittings should be used to join the old and new sections, instead of attempting to solder the ends together. Solder may be perfect today, but crystallized and broken tomorrow. ■

"How come you guys ain't made any deliveries today?"

"On the air"

(*Continued from page* 38)

what the radio system is being used. Whenever possible, entries of other than base-station-to-base-station communications should be entered—particularly if the communications refer to an emergency or to harmful interference. In the case of an accident or fire, complete details should be entered. (Additional notations should be listed under "Remarks" and other details entered on the reverse side of the sheet.) Corrections of logs should never be made by erasing the incorrect entry, but by lining it out, initialing it and dating it and writing in the correct information just above the original. Only the persons making the original entry should correct them.

"What sort of language should be used for message transmittal?"

Codes will save time, speed communications, and will also prevent misunderstandings. Here's a code that has been suggested for use:

10-4 —means "okay"
10-7 —"out of vehicle" (give reason)
10-8 —"back in service"
10-9 —"repeat message"
10-10—"arriving at customers"
10-20—"leaving customer"
10-30—"ready for assignment"
10-40—"what is your location"

In order to use a code, you must file a copy of it with FCC.

"What should I do about servicing my equipment?"

The best advice that could be given would be, "Leave it alone." For example, Federal Law says that your transmitter-receiver units can be adjusted only by licensed technicians. Make sure that your drivers do not try to tamper with it. It should be kept locked at all times. This is a job that requires skilled personnel.

The unit also requires periodic preventive maintenance. All transmitter adjustments on tests made during installation, servicing, or maintenance, which affect the operation of the station, must be made by or under the immediate supervision and responsibility of a person holding a first or second class commercial radio operator's license, either radiotelephone or radiotelegraph. Under Federal Law, no one else may attempt maintenance on the transmitting equipment. You may be an expert handy man at home fixing fuses and toasters; but if any part of your two-way radio equipment needs adjusting or repairing, leave it to the maintenance engineer.

You can, of course, do your own servicing if you have a properly licensed man or staff to do it. However, most manufacturers suggest that you contract the service out. DuMont, for example, has two types of service contracts. The first is the demand type of contract with or without parts which limits service to times of actual breakdown. The second type, which is usually recommended is the preventive maintenance contract, which provides service on a recurrent 30 to 60 day basis, depending upon the severity of the use of the equipment. A typical contract of this kind will cost anywhere from $6 to $10 a month with parts for mobile radio equipment servicing, and from $15 to $25 for base stations. ■

for long wear
low vibration
fast pick-up
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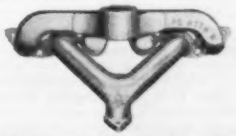
VANASIL
PISTONS

JOHN DEERE Vanasil Pistons —jump power output as much as 25%

MINNEAPOLIS-MOLINE "U" Vanasil Pistons—lightweight, yet tough as cast iron

LP conversions of John Deere and MM-"U" tractors result in more power and performance with Johnson Vanasil Pistons. Newly patented Vanasil amazingly combines the hardness of cast iron with the lightness of aluminum. Precision Johnson machining and engine "know-how" keeps pistons snug without sticking. Tractor vibration is kept *low* . . . stalling *eliminated* . . . pick-up *increased.*

For John Deere A, G, "50", "60" and "70"... also Minneapolis-Moline "U". Johnson Aluminum Pistons are available for John Deere A, B, D, G and H models



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Ford 600, 700, 800, 900 Series
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POSITION WANTED WITH PROGRESSIVE LP-GAS company. College graduate desires position as manager or assistant with growing company. Broad experience in all phases administration, engineering, and sales. Seek position offering greater challenge and opportunity. Reply Box 121, BUTANE-PROPANE News, 198 So. Alvarado St., Los Angeles 57, Calif.

POSITION WANTED: MAN, AGE 44, aggressive, responsible, fully qualified by ability and 12 years LPG experience in management, sales promotion and service relations, both wholesale and retail. Require salary, plus. Prefer Midwest. Reply Box 119, BUTANE-PROPANE News, 198 So. Alvarado St., Los Angeles 57, Calif.

HELP WANTED

COMMERCIAL RANGES, GRIDDLES, BROILERS AND OVENS—Foremost manufacturer wants agents to sell to L.P. gas distributors and dealers. Liberal commission. Reply Box 120, BUTANE-PROPANE News, 198 So. Alvarado St., Los Angeles 57, Calif.

BUSINESS OPPORTUNITIES WANTED

WANTED TO BUY: PROPANE PLANTS Upper Mid-West, also used tanks 100# to 30,000 gallon size. Reply Box 99, BUTANE-PROPANE News, 198 So. Alvarado St., Los Angeles 57, Calif.

WANT TO PURCHASE SEVERAL RETAIL LP gas businesses. Send information. Reply Box 117, BUTANE-PROPANE News, 198 So. Alvarado St., Los Angeles 57, Calif.

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LPG BULK PLANTS. WE SPECIALIZE in selling petroleum properties throughout Midwest. Have number desirable plants for sale. OLE BRODD, PETROLEUM MARKETERS, 605 Produce Bank Bldg., Minneapolis, Minnesota.

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FOR SALE: HALF INTEREST IN PROPANE Retail Business. Located in Middle Atlantic States. Bulk delivery and cylinder business with Bulk Plant, Showroom and three (3) trucks. Business growing each year with great potential. $25,000 cash required, balance on terms or complete sale. Reply Box 115, BUTANE-PROPANE News, 198 So. Alvarado St., Los Angeles 57, Calif.

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6,000 to 18,000 PROPANE STORAGES for rent or lease. Reply Box 116, BUTANE-PROPANE News, 198 So. Alvarado St., Los Angeles 57, Calif.

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FOR SALE: USED PROPANE TRUCKS. Late Model units ready to go. 1000 to 1600 WG. Also New Units in all sizes. Easy Terms. WE TRADE. White River Distributors, Inc., Ph. 570—Batesville, Ark.

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FOR SALE—USED PROPANE DELIVERY TRUCKS—Ready for service. 1,200 to 1,800 W.G. Financing available. Also New Trucks. Write for list of units and prices. McNAMAR AND CROWLEY, INC., Box 210, Salem, Illinois.

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$618.00 Down and 36 payments of $175.64 including interest.

2000 WG Twin slightly more. Other sizes tanks, pumps, meters, etc., also available. WE TRADE. IMMEDIATE DELIVERY.

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Ph. 570—Batesville, Ark.

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In Stock — Immediate delivery Twin 1400 through 2450 WG your chassis or ours.

There's more cold weather ahead . . . call, write or wire: RAY REEDY

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— IN STOCK NOW —

3000 gallon size built especially rugged for oil field use. Write, wire or phone

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(Advertisement)

You'll close more appliance sales when you use this handy COMPETITIVE COST CALCULATOR

Now . . . with this authoritative, convincing sales tool, you can prove to your prospects *quickly, easily,* and *simply* that LPG costs less than electricity for cooking and water heating. Money talks with most people, so *dramatize the savings* with a Competitive Cost Calculator.

Compares the average annual cost of operating LPG versus electrical appliances, using your own local rates.

Proves to your customers' satisfaction that it's less expensive to cook and heat water with LPG than with electricity.

It's authoritative! Average annual usage figures for both LPG and electricity are taken from Technical Bulletin 1073 prepared by the U. S. Department of Agriculture.

It will last for years. Made from durable plastic-laminated board.

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The Competitive Cost Calculator builds fuel sales as it builds appliance sales. Hundreds of LPG appliance salesmen are using the Calculator to add authority to their sales presentations. Be sure each of your salesmen has one with him on every call.

$1.00 each

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The supply is limited, so order today!

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Wood Co., John
Heater & Tank Div. —

*Zenith Carburetor Div.
Bendix Aviation Corp. 111

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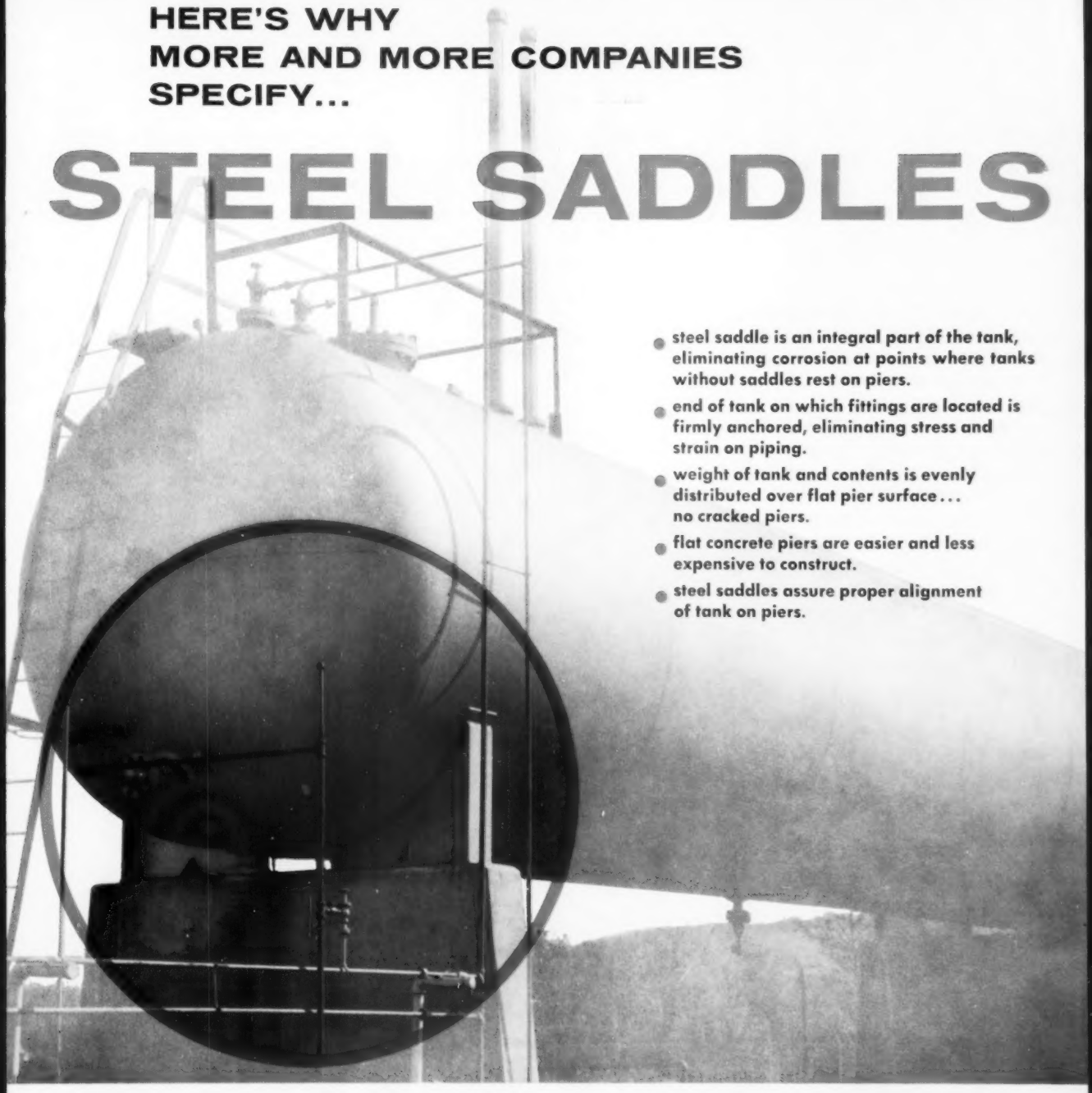

- steel saddle is an integral part of the tank, eliminating corrosion at points where tanks without saddles rest on piers.
- end of tank on which fittings are located is firmly anchored, eliminating stress and strain on piping.
- weight of tank and contents is evenly distributed over flat pier surface... no cracked piers.
- flat concrete piers are easier and less expensive to construct.
- steel saddles assure proper alignment of tank on piers.

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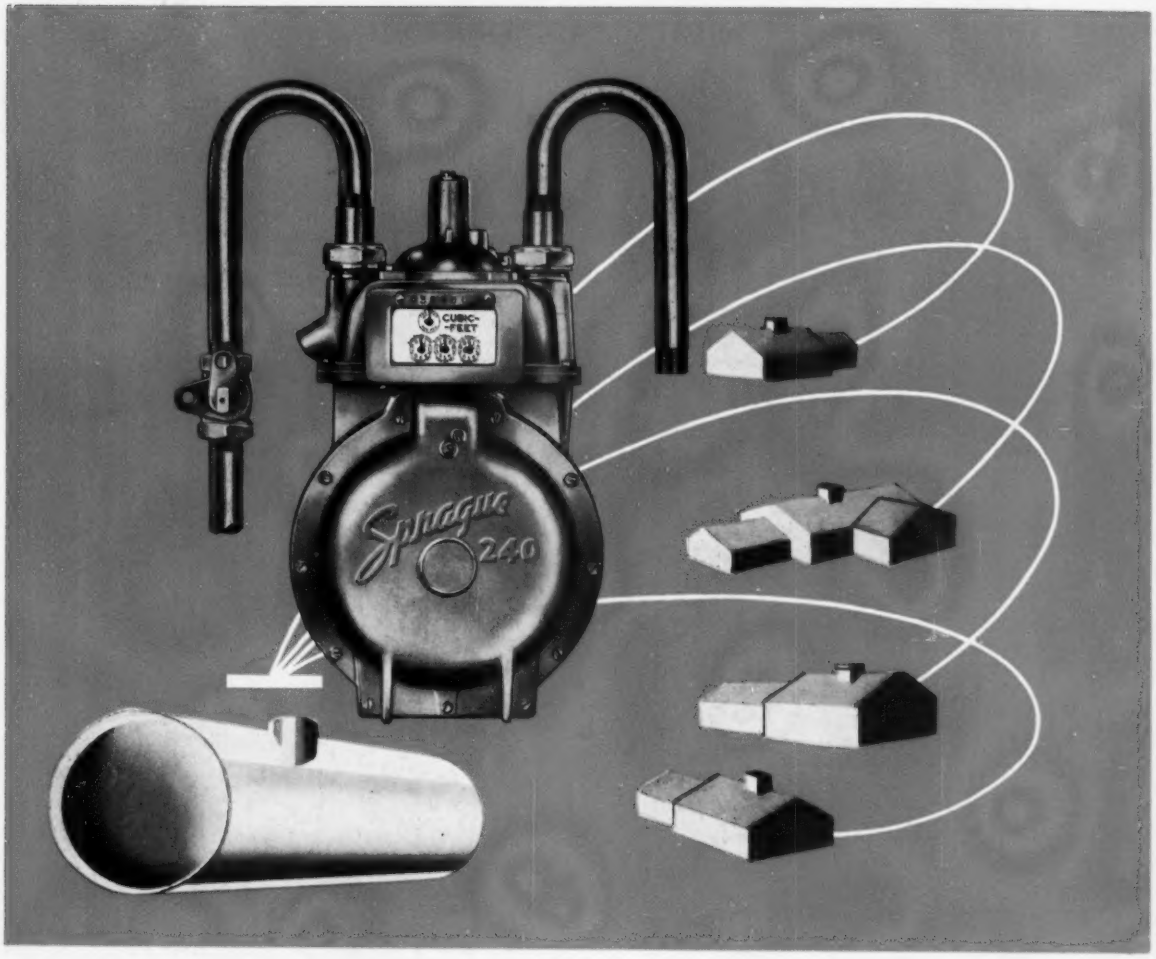

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